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Teaching Practicum IQP at Forest Grove Middle School

Angela Maria Jimenez
Worcester Polytechnic Institute

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Winter - Spring 2014
Angela Davis

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Abstract

For the Winter and Spring terms of 2014, I completed a Teaching Practicum IQP at Forest Grove Middle School in Worcester, Massachusetts. In preparation I registered and completed a Teacher Preparation Course at Worcester Polytechnic Institute and wrote a research paper. While at Forest Grove, I observed and then taught Life Science for four Eighth grade classes with the goal of learning and mastering the 5 Professional Standards: Plans Curriculum, Delivers Effective Instruction, Manages Classroom Climate, Promotes Equity, and Meets Professional Responsibilities. This paper will demonstrate that I have achieved competence in all 5 Professional Standards.

Chapter 1: School Background

1.1 Massachusetts Education Reform Act

For some it is difficult to think of graduating from high school without passing or mastering all of the subjects, but before the Massachusetts Education Reform Act of 1993 (MERA), the only real qualifications for graduating high school were physical education and history. More than twenty years ago, that was the only standard. Today, and for the past two decades, more standards have been created in the sciences, arts and humanities, English, and more to really build the best educational system possible. The main goals were to help as many students participate and pass the MCAS, to raise the bar not just in one school or district, but all across the state, and give all students access "to a high-quality education that prepared them for college and careers (Mass Insight, page 1)." For the future in educational reform, achievement gaps between high and low class students, students in urban or suburban areas, etcetera, need to be closed to put all students "on a level playing field (Mass Insight, page 2)."

1.2 How Does Massachusetts Compare?

To compare Massachusetts' education to other states, there are different types of data that can be looked at. Looking at the 2013 Average SAT scores with 70% or higher participation rates, Massachusetts ranks second with New Hampshire in first (Commonwealth Foundation). However, some states don't use the SAT as heavily as the ACT. The average ACT scores from 2013 show that Massachusetts in definitely in the top 3 highest scoring states. But Massachusetts only had a participation rate of 22% of graduates (act.org). Comparing each

states' standardized test scores is not a good comparison because each state has a different idea and standard of what "proficient" means. Comparing the states report cards, an average of grades of each states' college readiness, adult success, K-12 achievement, and more, the chart on Education Week shows Maryland in first and Massachusetts in second with other states like NH, FL, CT, and DE well above the country's average (Ed. Week). Comparing the education just within the United States is difficult. Massachusetts does have a good reputation based on college readiness and achievement, STEM involvement, and other data. Of the three types of data highlighted above, the state report card is probably the most reliable if looking for state rank because it looks at more than just test scores.

Going beyond the states within the US, there is a way to compare education around the world. This study is called the Trends in International Mathematics and Science Study, or TIMSS, and measures the 4th and 8th grade achievement in math and science in about 50 countries around the world. The study started in 1995 and is done every four years. However, the number of countries in the study may change a little year to year. Each year that is it conducted, fourth graders are tested in math content areas of numbers, geometric shapes and measures, and data display, and science content areas of life, physical and earth science. Eighth graders are tested in numbers, geometry, algebra, and data and chance for math, and biology, chemistry, physics, and earth science for science (TIMSS, page 5). 2011 mathematics scores show USA higher than the TIMSS scale average of 500 in both grade levels and in the top 8 of 57 countries that participated (TIMSS, page 9). Over more time, improvement of the United States from previous years as well as the growth of the US's education systems compared to the world's leading education systems will be more evident.

1.3 Curriculum Frameworks & Learning Standards

Each state and country has its own standard as mentioned before. The Curriculum Frameworks are used in each grade level and content area to make sure teachers and schools cover what is needed for students to pass and be prepared for college and/or careers after graduation. They were put into place after the Educational Reform Act of 1993 and they show the content necessary, what goals should be reached each year, and the type of thinking and problem-solving skills necessary at each grade level to make sure the students are advancing at the desired rate. The Science and Technology/Engineering Curriculum Framework sets 6th-8th grade objectives: being able to hypothesize, design and conduct experiments, select tools, make observations, present findings, make conclusions, and explain and communicate the results. Pages 51 to 53 in the Curriculum Framework provided by Mass DESE has 18 learning standards expected in grades 6-8 in the following content areas: Classification of Organisms, Structure and Function of Cells, Systems in Living Things, Reproduction and Heredity, Evolution and Biodiversity, Living Things and Their Environment, Energy and Living Things, and Changes in Ecosystems Over Time. Those standards are a part of the Common Core initiative to advance the country's education system in a clear a consistent way, prepare students for college and careers after graduation, take international education standards into account, and make sure students are proficient in both content areas and the skills needed to apply their knowledge. For Mathematics, Science and Technology, students should be able to acquire, integrate, and apply essential knowledge.

Below it is broken down further:

Mathematics, Science and Technology

- Know and understand major mathematical concepts such as measurement, estimation, quantity, probability and statistics; and explore the relationship of mathematics to other areas of knowledge.
- Recognize and use patterns, construct mathematical models, represent and reason about quantities and shapes, draw accurate conclusions from data, and solve, justify and communicate solutions to problems.
- Apply the fundamental principles of the life sciences, physical sciences, earth/space sciences and the science of technology to analyze problems and relate them to human concerns and life experiences.
- Investigate and demonstrate methods of scientific inquiry and experimentation.

http://www.doe.mass.edu/edreform/commoncore/full.pdf (Antonucci)

1.4 The Common Core

This Common Core initiative is country wide meaning the educational systems of each state will be all aligned with each other as the initiative is put into action further and the transition nears completion. The process is broken down into three steps, educational reform, the development of state curriculum frameworks, and the development of an assessment system to measure the success of students and schools' progress (Antonucci). The plans of action for each state will be very different. For Massachusetts specifically, because it is already considered one of the top states in education, the transition may be much smoother than the states that are lower in rank (greatschools.org).

1.5 Forest Grove Middle School

Individual schools in each state have a plan to help with the transition and achieve the schools specific goals. Forest Grove Middle School, in its School Accountability Plan, lists several methods that will help the transition along including incorporating more writing and nonfiction reading and writing into lessons, peer tutoring every F day rotation, an ELL After School Program, and 5 week assessments. The school also plans to interact more with families and hold more school wide family events. One of the long term goals is to cut the proficiency gap in half by 2017. For science classes specifically, an increase of reading and writing, F.O.R.C.E. (Focus On Reading Comprehension Everyday) posters hung up in the classroom, common labs, training with TI Calculators in the classroom, AVID tutorials every Wednesday, and 10 Week Technology Enrichment courses for 8th graders are all in the plan for the transition or have already been implemented. (FG School Accountability Plan)

Forest Grove Middle School is located in Worcester, MA in the Forest Grove neighborhood near the Salisbury Street area. The Forest Grove neighborhood, with a population of 7,849 people, has a median household income of about $81,661 compared to the median household income for Worcester at $44,580. But a neighborhood just south of Forest Grove has a median household income $32,148. Forest Grove Middle School is right in the middle of many different neighborhoods. (Worcester Neighborhood Map) The table below shows some selected populations from Forest Grove's students compared to the District and State numbers. Forest Grove has higher populations of students in every category compared to the state's, the most

striking one being the Free Lunch group with over half the students in the school receiving free lunch. (Mass DESE)

Selected Populations (2012-13)

Title	% of School	% of District	% of State
First Language not English	34.5	44.0	17.3
English Language Learner	22.0	34.3	7.7
Low-income	60.7	73.1	37.0
Students With Disabilities	20.4	20.7	17.0
Free Lunch	53.0	66.8	32.1
Reduced Lunch	7.7	6.3	4.9
High Needs	68.2	81.7	47.9

Forest Grove Middle School also has a very diverse group of students, some coming from different neighborhoods and others from different countries. The following table shows the Enrollment Data by Race and Ethnicity from 2012-2013 compared to the District and State data. Almost half the school consists of students that are white, just under a third are Hispanic, 11% are African American, about 8% are Asian, and the remaining percentage are Multi-race, Non-Hispanic, and Native American.

Enrollment Data by Race/Ethnicity (2012-13)

Enrollment by Race/Ethnicity (2012-13)			
Race	**% of School**	**% of District**	**% of State**
African American	11.1	14.2	8.6
Asian	7.7	8.1	5.9
Hispanic	31.7	38.1	16.4
Native American	0.1	0.3	0.2
White	46.4	35.8	66.0
Native Hawaiian, Pacific Islander	0.0	0.0	0.1
Multi-Race, Non-Hispanic	3.1	3.5	2.7

Enrollment Data by Gender (2012-13)

Enrollment by Gender (2012-13)			
	School	**District**	**State**
Male	545	12,824	489,289
Female	432	11,916	465,484
Total	977	24,740	954,773

1.6 Massachusetts Comprehensive Assessment System (MCAS)

The Massachusetts Comprehensive Assessment System (MCAS) exam is a test that students take at different times in school before they can graduate. It is based on the curriculum standards and must be passed in order to graduate to ensure they have an understanding of the subject matter. The MCAS exam tests areas of English Language Arts, Mathematics, and

Science and Technology/Engineering. Students in grades 3-8 take it and are scored into four achievement levels, Advanced, Proficient, Needs Improvement, and Warning. In grade 10, students must place in one of the top three, otherwise, they are placed in the failing achievement level and must re-take the exam in a later year.

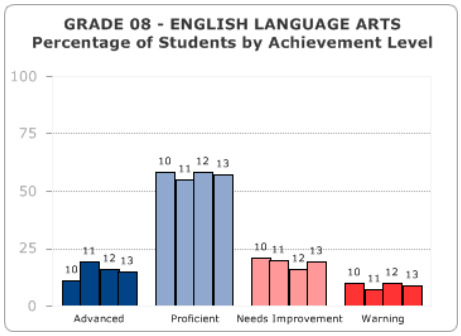
Below are the MCAS achievement levels students scored from 2010-2013 for students in grade 8 for English Language Arts (ELA), Mathematics, and Science and Technology/Engineering at Forest Grove Middle School. For ELA, most 8th grade students scored in the proficient range with some increase in advanced placement levels and a decrease in the Needs Improvement and Warning levels. Mathematics scores showed an increase in the Proficient level however a decrease in advanced scores. There were less Warning level scores and more Needs Improvement scores which show some progress. Finally, for Science and Technology/Engineering, only 2% of students scored in the advanced achievement level over all four years. However, there was an increase in Proficient scores and a decrease in Needs Improvement scores with the Warning scores staying the same over the four years. (MassDESE) Following the Grade 8 charts are the 7th grade achievement levels scored by students from 2010-2013 for Mathematics and English Language Arts at Forest Grove. For ELA, about half of the seventh graders scored in the Proficient range with a 6% decrease from 2010 to 2013. Over that time there was also an increase in the Advanced level scores. Needs Improvement and Warning level scores have stayed about the same. For Mathematics, there is a 5% increase from 13% to 18% in advanced scores however, there was a significant drop in Proficient scores and an increase in Warning level scores.

MCAS Annual Comparisons

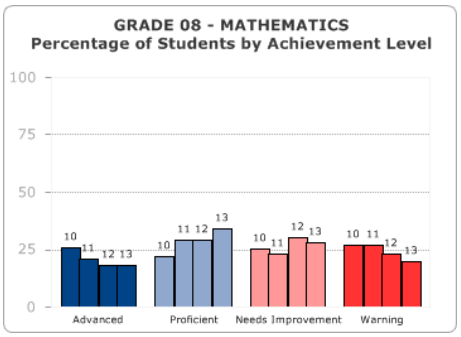
*** NOTE:** Achievement level percentages are not calculated for groups with fewer than 10 students.

Data Last Updated on September 20, 2013

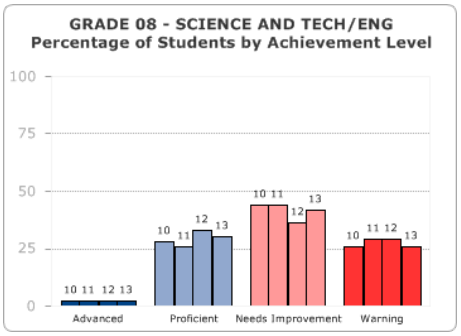
GRADE 08 - ENGLISH LANGUAGE ARTS ACHIEVEMENT LEVEL	2010	2011	2012	2013
ADVANCED	11	19	16	15
PROFICIENT	58	55	58	57
NEEDS IMPROVEMENT	21	20	16	19
WARNING	10	7	10	9



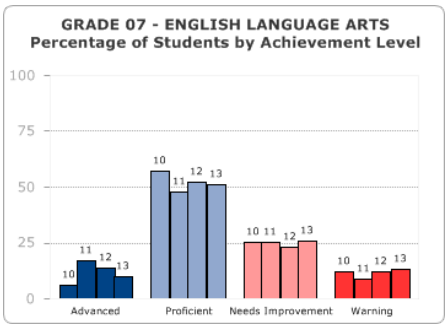
GRADE 08 - MATHEMATICS ACHIEVEMENT LEVEL	2010	2011	2012	2013
ADVANCED	26	21	18	18
PROFICIENT	22	29	29	34
NEEDS IMPROVEMENT	25	23	30	28
WARNING	27	27	23	20



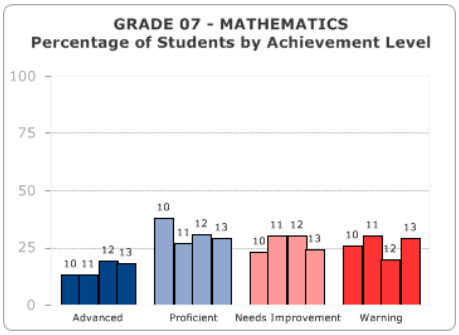
GRADE 08 - SCIENCE AND TECH/ENG ACHIEVEMENT LEVEL	2010	2011	2012	2013
ADVANCED	2	2	2	2
PROFICIENT	28	26	33	30
NEEDS IMPROVEMENT	44	44	36	42
WARNING	26	29	29	26



GRADE 07 - ENGLISH LANGUAGE ARTS ACHIEVEMENT LEVEL	2010	2011	2012	2013
ADVANCED	6	17	14	10
PROFICIENT	57	48	52	51
NEEDS IMPROVEMENT	25	25	23	26
WARNING	12	9	12	13



GRADE 07 - MATHEMATICS ACHIEVEMENT LEVEL	2010	2011	2012	2013
ADVANCED	13	13	19	18
PROFICIENT	38	27	31	29
NEEDS IMPROVEMENT	23	30	30	24
WARNING	26	30	20	29



1.7 English Language Learners & Sheltered English Immersion

An English Language Learner student or ELL student is a student who is learning English and it is not their native language. Being in an English-taught classroom, and for many ELLs being in a classroom with a different culture than their own, it can be difficult for them to feel comfortable right away, enough to participate in discussions or answer questions. This presents a challenge for teachers teaching classes consisting of a mix of ELLs and native English-speaking students and for ELLs in the learning process. The proficiency gap for ELLs is very large and ELLs have the highest dropout rate of all the student sub-groups. ELL populations have increased 50% in the last 10 years, which is a very fast-growing population in comparison to the other sub-groups, so changes need to be made to prepare teachers to deliver the best instruction for both English-speaking and English-learning students. (Mohr and Mohr)

Sheltered English Immersion is a strategy used by teachers to help ELLs learn English. Teachers train in four basic categories: Introduction to Second Language Learning and Teaching, Sheltering Content Instruction, Assessment of Speaking and Listening (Massachusetts English Language Assessment-Oral), and Reading and Writing in Sheltered Content Classes. The ELLs go through the program and when considered "fluent English proficient," they move on.

(See Guidelines for the Sheltered English Immersion (SEI) Teacher and SEI Administrator Endorsements; doe.mass.edu)

Chapter 2: Observation

2.1 Introduction

Before starting the teaching part of the practicum, there was an observation period of 75 hours. Having this period was important to me, Julius Kahira the mentor teacher, and all the students. I got the opportunity to get used to the classroom, school, routines, and how Mr. Kahira ran his classroom as well as seeing the behavior, diversity, culture, and learning styles of the students. It also gave the students a chance to get to know me a little better before I started teaching them which made for a smoother transition. What I was looking for were methods that Mr. Kahira used that were effective, how he used the materials, how he related to his students, and how the students responded to their teacher. The main part of the Teaching Practicum is to achieve competence in the 5 Professional Standards and an important part of the observation period is first being able to identify another teacher that is using those standards in their classroom.

2.2 Mentor

Julius Kahira is one of the science teachers at Forest Grove Middle School who agreed to mentor me during this practicum. One of the first things I noticed about his classroom when I first got there was that he established a clear system that communicates to the students in several ways the tasks that will be completed in class. When you get a fresh set of students at the beginning of the year, a routine and rules are put in place to prevent miscommunication, misbehavior, and a classroom environment that hinders learning. Mr. Kahira's classroom directs

the focus towards the front of the room where the board is, there is an agenda board in the front with tasks to complete that day, and a place on the white board for the bell work, the work that must be started immediately after entering the classroom. Mr. Kahira established all of these things with his students before I got there and as I saw him use those methods to help focus the students right from the beginning of class, I could see he definitely mastered managing the classroom climate.

Making a lesson plan and being prepared to teach is one requirement, but also preparing something just in case the lesson doesn't go as planned is a helpful skill. With four classes all at different levels, Mr. Kahira demonstrated that he knew the speed of which his students would accomplish an assignment. If one of the classes moved a little slower he would adjust it to fit their learning needs by explaining the instructions more and doing more examples. For the classes that might finish faster than expected, he always had a video, a game, or another short assignment ready so he wasn't wasting class time. This meant the InFocus Projector was on, any internet tabs were ready, or PowerPoint presentations were loaded before the students even walked in the door. He also prepared more challenging or reflective questions to make for a longer discussion if he had more time at the end of a lesson than he predicted.

Everyone has had a teacher at some point who would teach successfully, but they would overlook the students who were not paying attention or participating. Teaching to them may have meant just starting and finishing the lesson, not necessarily educating everyone in the classroom. Mr. Kahira did go out of his way in most cases to get everyone involved in the lesson and made sure students who were distracting others were spoken to. However, there were a

few times where the behavior of a student would be too much to handle in front of the entire class and it would have led to the whole class getting off topic. In those cases, Mr. Kahira saw that situation after giving several verbal warnings, and then would tell the student to leave the classroom or give them a detention to distinguish any more of the same type of distraction that would keep others from learning.

A very important resource for the students was the Prentice Hall text book. There were several short books that went along with each Life Science unit. Unfortunately, there were not enough for each student to have one that they could take home and use. This meant Mr. Kahira could not rely too much on the text books for assignments, especially those that were to be done at home. The books had to stay in the classroom which limited the amount of time the students could use them. Mr. Kahira made up for this by strategically putting time aside for only using the book and he made sure he was extremely familiar with the section they were going to look at in advance so he didn't waste time looking for specific examples and page numbers. This showed he planned a lot in advance and it paid off during the lesson. The select number of pages he chose to use during instruction were often pictures or diagrams that would stay in the students' memory throughout the unit. Then at later times, he would mention them to help students remember, for example, how a Punnett Square is set up and used in Genetics.

As a result of not being able to rely heavily on the text books, Mr. Kahira often developed his own materials, packets, and print-outs as well as finding labs or projects from other sources. This allowed him to really cater to the differences in learning styles of his students. For example, while learning about Natural Selection, he found a card game that would use visuals,

colored flash cards, and group work to help with understanding evolution and how a species might survive or go extinct. The print out instructions called for black cards, however the classroom supplies only had green cards. The packets were already prepared so Mr. Kahira, while explaining the game to the students, told them to cross out “black” and write “green” instead. This confused two of the classes, the classes with a lot of students with language barriers and/or attention issues where they could not understand or listen to instructions. This used up a lot of time and a lab that initially was planned for one class period turned into three class periods. The honors class however finished everything in the same day and ended up ahead in the unit. One thing that could have been done was prepare the materials for the lab before printing out all the packets for the students to save time, prevent confusion, and have more time to help the students play the game.

A skill that is necessary to be a successful teacher is being able to relate to your students and relate the topic of the lesson to their world. Mr. Kahira throughout the entire time I was observing was able to come up with very simple, yet effective metaphors, relationships, and examples that helped the students relate to and understand the material. For example, while teaching a lesson on Genetics and Punnett Squares, he started broad talking about the probability that certain situations might occur, football game outcomes with the Patriots or coin tosses with heads or tails. Then he went into characteristics students might have because of their parents. This lead to a great transition to animals and a Punnett Square game crossing different types of rabbits. This really demonstrated that Mr. Kahira knew his students’ interests and what would help them understand inheritance patterns.

2.3 The Students

In the time that I was observing, I was able to see how the students behave under Mr. Kahira's instructions, see the differences across each class, gauge the amount of leeway or discipline each class or student needs, and of course learn their names. I was also able to do a lot of practice just working one-on-one with students one individual problems. This gave them the opportunity to get used to me in the classroom, see how I explain things, and tell me a little about themselves. The students' hobbies and passions ranged anywhere from theater, art and musicals and competitive gymnastics to robotics and basketball.

2.4 Teacher - Student Interaction

The mentor teacher, Mr. Kahira, and his students definitely had a routine in place for class time. They knew that upon entering his room, he had certain expectations for everybody. They responded very well to him when they were goofing off and he just had to state that they knew the routine and that at no time did it change in favor of poor behavior. Usually that was enough to get them to stop what they were doing; most of the time it was side conversations while students were supposed to be focused on an activity or the teacher.

Every class had at least a pair of students who would always talk no matter who they were sitting next to or what they were supposed to be doing. Mr. Kahira gave a couple verbal warnings to the class as a whole to stop talking. Then the third time, whoever he heard first, they would either have to move their seat or they would be kicked out of the classroom. There were some times though where Mr. Kahira would make the wrong student move, even though it stopped the talking, they were a student just sitting near the talkers. Mr. Kahira would diffuse

the situation appropriately however there were times where the student did not care who the authority figure was. They would act out or be disrespectful whether it was me, Mr. Kahira, or even the principal. In those situations, the best solution was just to send them to the office quickly to avoid loss of instruction time.

While I was doing my teaching practicum, Mr. Kahira was going through his second year with the same students. Teachers alternate 7th and 8th grade so they are with the same students for the entirety of middle school. So Mr. Kahira knew these students very well and was comfortable with a certain type of communication and way of punishing students.

The students liked my presence in the classroom and seemed excited for me to start teaching. Finding what I'd be comfortable saying and doing if a student or class was misbehaving or being disrespectful would only come with the teaching part.

2.5 Where Do I Stand?

It was very impressive seeing an experienced teacher now with the new knowledge about the teaching process instead of looking at them from a student's perspective. Mr. Kahira definitely knew how to plan for his students and also stay on his toes for the curve balls that students would throw. He anticipated when some students might fall behind, when a certain situation might cause a delay in lesson time, or when he might have to change around his whole lesson because his expectations of the students changed. I can only hope to acquire these skills when doing the teaching part of the practicum.

The only difference I can find with Mr. Kahira's teaching style and what I think mine might be is the level of strictness. I think a more relaxed environment yet with set rules is more conducive

to learning as well as more enjoyable for me and the students. Everything else Mr. Kahira demonstrated, having a routine, being organized, mixing up the types of instruction and activities students participate in, seems to line up with how I would like my classroom to run if I became a teacher.

Chapter 3: Plans Curriculum and Instruction

Drawing from the content standards, it is important to plan the essential questions and instruction efficiently in the amount of time allotted. The instructor having a plan and routine for introducing and teaching new lessons as well as a system for determining the expectations of the class is key to staying on track during the class time and keeping the students on track as well. In my class, students knew to come in, look at the board for bell work to complete, and then look at the agenda board to prepare themselves for what was going to be done that day. Those simple activities saved time by immediately helping the students focus on class and staying focused as well as gave me more time to use formal and informal assessments. The bell work, after completion, gave me a starting point for the lesson and an idea of how quickly or slowly to pace the instruction or activity. For the English Language Learners, it also gave me a sense of how the academic language and vocabulary of the current lesson was being understood and if there were other vocabulary words available that were simpler, more commonly used and would be more productive in getting concepts across.

There are a lot of questions that come to mind for a student when learning a new topic in school. It's the teachers' job to think of what those questions will be ahead of time and find multiple ways of explaining the same answer so they are prepared for it in the classroom. Traveling through the Curriculum Frameworks, I always asked myself these questions before picking a project or activity or setting up a lesson plan: "Why was this interesting to me the first time I learned it?" or "why was it really uninteresting?" "What made it exciting for me to learn and how will I make it more exciting for my students?" "What are some ways I can make this

subject appealing to the students who absolutely dislike Life Science”? If I can come up with an answer to each of those questions, I feel confident that I can plan a lesson, project, or activity that will be successful.

Always considering the students is necessary. As a student, I know I need clear objectives and expectations to be successful in school. I also need different types of resources that will help explain the same subject but in different ways. In a classroom, there will be visual learners, auditory learners, and more. So I made readings from the text (Prentice Hall), writing activities, online capabilities via classroom laptops and examples available to everyone. I also made a rubric and/or a questions sheet for most of my activities and lessons so students were clear of what they should be able to do by the end of the lesson. Figure 1 shows an example of a rubric and a poster I made for the Ecosystem Poster Activity.


KEY:
A. predation
B. competition
C. parasitism
D. mutualism
E. commensalism
The two species of birds are competing for living space in the tree.
B.
The bird benefits by having space for it's nest. The tree is neither harmed nor helped.
E.
The ticks are a parasite to the hippo. The hippo is the host.
C.
D.
The hippo provides food for the bird and the bird gets rid of ticks from the hippo's back.
biotic
abiotic
A.
The snake is a predator to the mouse.

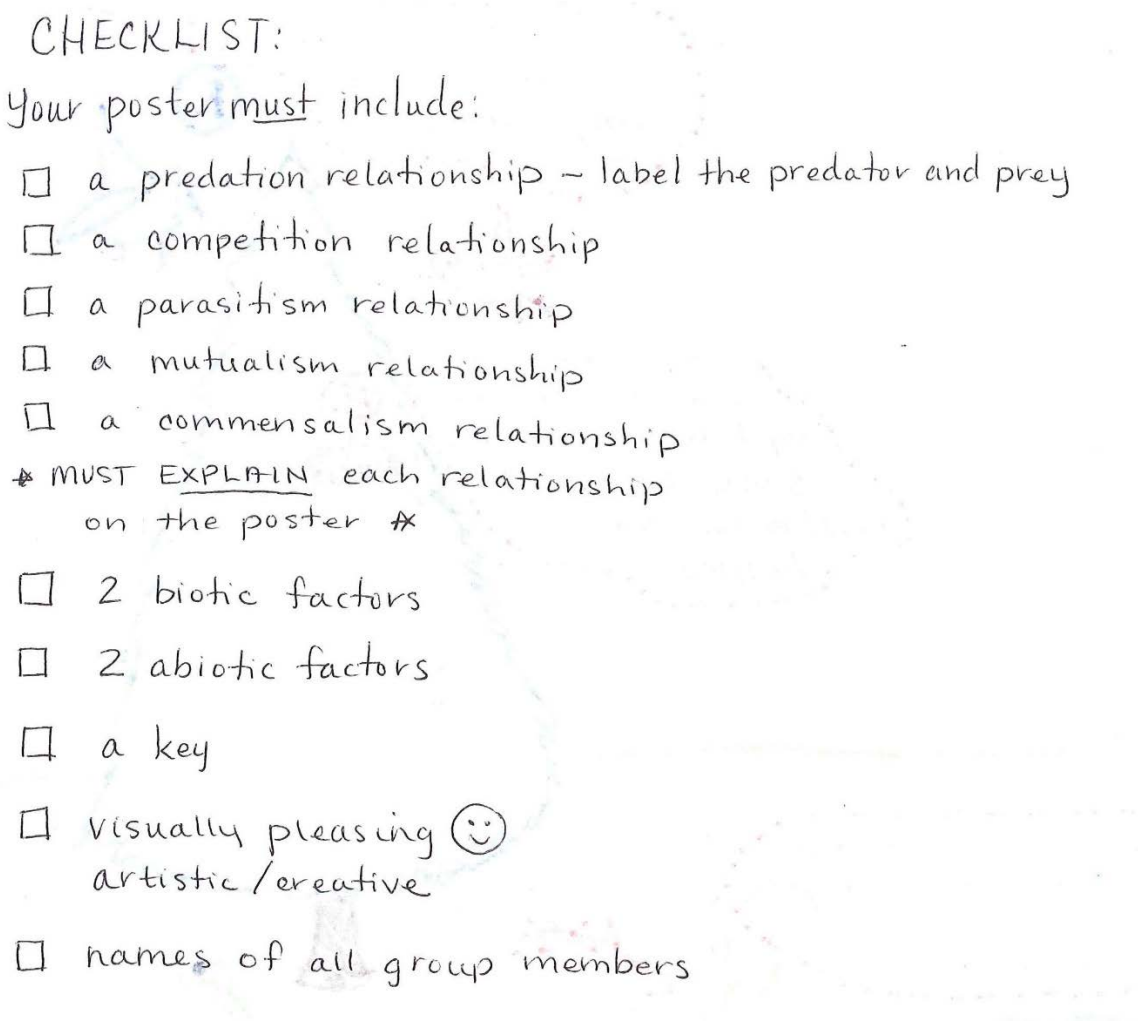


FIGURE 1: Ecosystem Poster Example and Rubric

It also gave them a picture of exactly how I would be grading their work. Points were distributed for each expectation in an activity and if they didn't meet the expectation, points were taken off. The review questions for the end of the activity were considered throughout the lesson and I would even drop some hints about the questions' answers to keep them focused and repeat important information.

Another method I used to appeal to a full range of students was the use of technology in the classroom. This included the projector, graphics, visuals, videos, laptop use and online games.

This appealed to ELL students who may pair a visual with the academic vocabulary that may be hard to grasp by itself. For example, when talking about completing a Punnett Square during the Genetics unit, examples of Punnett Squares were put up on the projector first for the class to work through together. Then everyone played a game on the laptops that would show crosses of different characteristics in bunnies on the Punnett Square as well as what the bunny actually looked like. This helped with the establishing the difference between genotype, the actual alleles an organism has for a specific trait, and phenotype, the physical characteristic. Doing activities like this also helped the students who learn more successfully using visuals. For those who have trouble learning sitting down doing the same activity for a long period of time and for those who generally don't enjoy science as a subject, playing games, using the laptops, watching videos, and incorporating a break in the type of instruction added a little more excitement to the class. Then when students asked questions later on how to complete a Punnett Square, the Furry Family Punnett Square Game was used as a reference and they remembered the visuals from the activity. The following figures show some of the helpful visuals from the game that helped students recall how to set up a Punnett Square and remember the difference between genotype and phenotype.

Figure 2: Furry Family Punnett Square Game Instructions

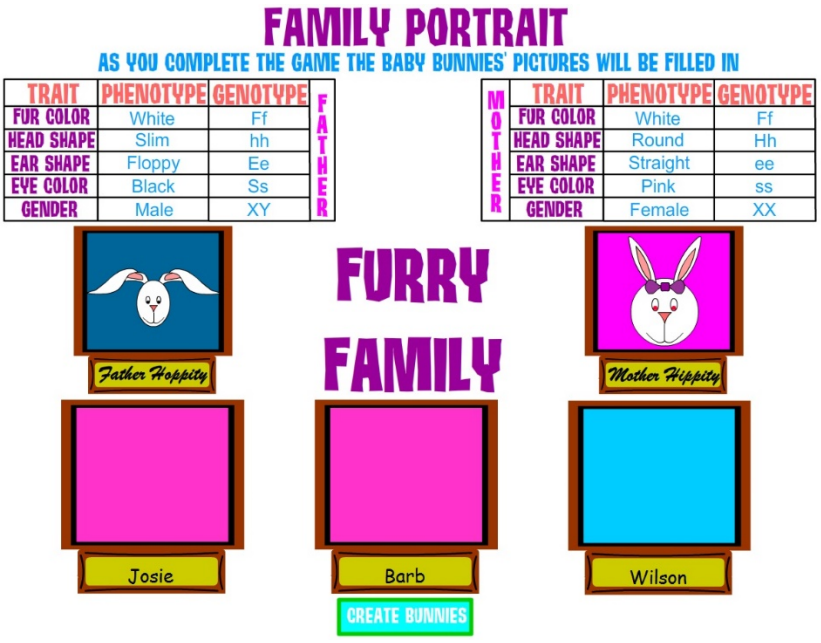


Figure 3: Beginning of game giving the genotypes and phenotypes of the bunny parents that will be crossed to get three offspring (show at the bottom of the figure)

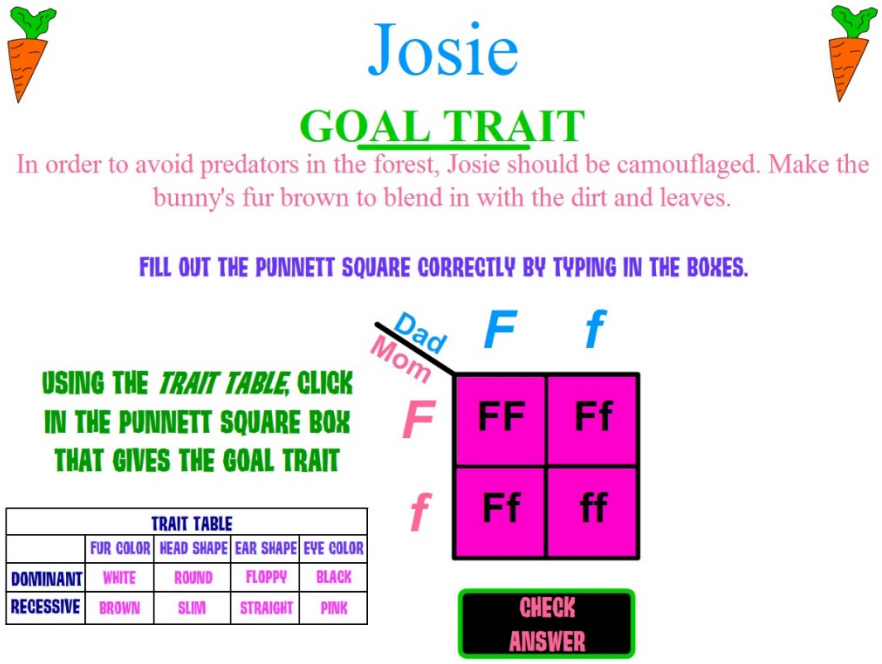


Figure 4: The first Punnett Square cross for the first baby bunny where the goal trait is camouflage (brown fur is a recessive trait)

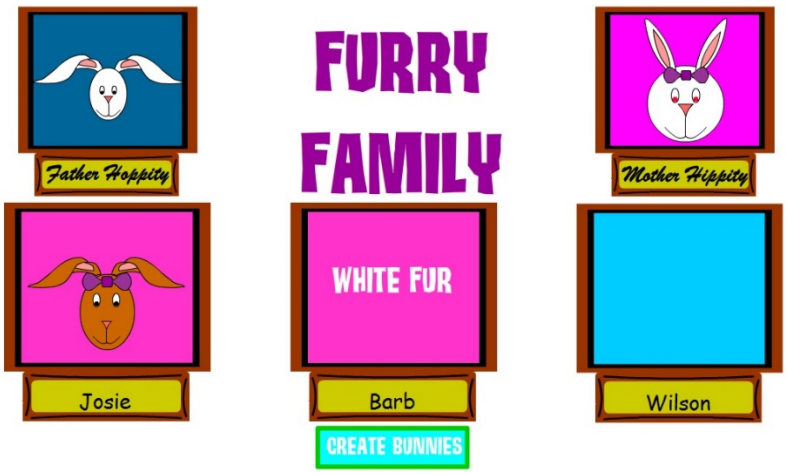


Figure 5: Josie, the first baby bunny, has been completed and the second offspring, Barb, is being completed

Figure 6: This student is completing the last set of Punnett Square crosses

Figure 7: This student has won the game and completed three successful crosses to achieve the correct genotypes and phenotypes (a total of 12 Punnett Squares)

http://vital.cs.ohiou.edu/steamwebsite/downloads/FurryFamily.swf

Some students who get stuck while working by themselves are shy or scared to ask questions or seek help. Having the students work with a partner on this game helped because they were able to work through it together. If they both got stuck on something, vocabulary, language, or a part of the game, the two students would seek help together. As the teacher, this was an effective way to gauge which students were having difficulty with the concept and which were doing well because they could only more on when they correctly completed each Punnett Square. The teams of two all moved at their own pace and students took turns so that one member of the group did not do all of the work while one student just sat and watched. The teams that finished quickly would play the game again too and then help the other students who were having trouble on certain parts. This lesson was a great example of planning an activity that gets everyone involved using multiple types of teaching strategies, technology, and informal assessments.

Chapter 4: Delivers Effective Instruction

In order to see and measure results from your students and then take that data and improve your planning and delivering skills, you have to make sure the expectations you have in mind for your students are communicated to them clearly and in several different ways. This could mean by direct instruction and lecture, informal assessments, written instructions and rubrics, and showing examples of what is expected (pictures, posters, and etcetera).

At the start of the Heart Rate Labs, Part 1 and 2, (see Appendix E) direct instructions were given as well as a review of the vocabulary needed to complete the labs and the review questions at the end. A series of informal assessments and question and answer sessions with students were carried out to double check that they knew what was expected throughout the class period. Together, the students walked through the procedure for finding their pulse and someone else's pulse through teacher assisted reading followed by some pictures in the packet showing the heart and which arteries we were using when finding a resting or exercise heart rate. Then students were told to work with a partner, and because one of the activities was to be completed outdoors, expectations for behavior and respect for school grounds and people were reiterated and made clear that they extended beyond the walls of the classroom and school.

The two parts of the lab were to be completed over two days, one indoors and one outdoors. The indoor lab was finding and calculating a resting heart rate and answering questions about why the heart rate might fluctuate throughout the day. One method that helped me as a student when completing some activities was seeing the teacher also doing the activity. So,

while students were trying to find their pulse, I walked around the room helping students and showing them on my wrist where the pulse might be and then demonstrating on their wrist. Saying the words and showing the picture of a cartoon doing it helped some students but feeling the pulse on someone else before they understood how to find it themselves was the last method used that got all of the students in the class on the same page.

Figure 8 below shows a Plus/Delta form from the Teacher Preparation Course at WPI. These forms were completed during lessons that the students in the course were teaching to their fellow classmates and instructors. The Plus column shows positive observations from the lesson in each standard and the Delta column shows this that might need to be modified or suggestions that might work better in each standard. The form in Figure 8 was filled out during the first lesson that I taught in the course covering balancing chemical equations and defining different types of reactions for High School Chemistry.

Observer____John_____

Presenter's Name___Angela_____4:01 – 4:22 (21 minutes)

Lesson Feedback Form – type your +/Δ responses into the appropriate space in the table below. Comment on each of the professional standards listed in the table.

Standard	Sample Descriptors	Plus – Positive observations	Delta – suggestions for change
Plans Curriculum and Instruction	- Clear objectives - Incorporates appropriate technology and media - Draws on content standards - Draws on formal and informal assessments	Objectives were clearly measurable (classify, predict)	

Delivers effective instruction	- Communicates high standards and expectations - Uses varied content teaching techniques, from more teacher-directed (direct instruction, practice) to less teacher-directed (discussion, cooperative learning, projects) - Uses questioning to stimulate thinking - Provides feedback to students periodically	DO NOW – took approximately 120 seconds, including passing around the hat. Good idea to reflect immediately on DO NOW, so that there is some immediate feedback for students. Also was a good idea to ask students (Tyler, what did you do first?) their thought processes when answering the question. Single replacement – nice use of an analogy to let students visualize these concepts (Audrey, Bobby, Chris dating woes). With chemistry, it is hard for S. to visualize – either conceptually or even in the lab – the concepts. Analogies/metaphors/graphic aids tend to help.	Don't be afraid to call on students to answer questions, including giving answers to the do now questions. Not clear if the DO NOW worked as a review of the prior lesson, or it was a skill needed for today's lesson. It could be connected to the classification discussion by stating that the students would then need to balance the equation…that the general forms (A + B → AB) is generic…not balanced yet. Though you did link this balancing concept when you did combustion reactions.
Manages classroom climate and operation	- Maintains appropriate standards of behavior, mutual respect, safety - Manages classroom routines and procedures without loss of significant instructional time	Grouping assignments based on pre-made cards. Evidence of pre-planning.	Can you think of something that would make your timing even easier? (I get that you couldn't do it here, so no worries). For example, if you knew you needed the colored pencils for each group, you could pre-sort these w/ an elastic.

Promotes equity	- Encourages all students	When a student (Renah) had an error, you worked with her to get through the question, and focused on the technique, not just the answer.	
Meets professional responsibilities	- Conveys knowledge and enthusiasm to students		

Great start Angela.

Figure 8: Plus/Delta Form for first time teaching a lesson in the Teacher Preparation Course (WPI Teacher Preparation Program)

Referring to the second row, Delivers Effective Instruction is highlighted in yellow, and shows the feedback from John Staley, the instructor of the Teacher Preparation course. This form was looked at several times throughout the teaching practicum to help modify my teaching methods and remember the helpful tips given to me from this lesson. When starting a new unit that students may not have any background in yet, they tend to be a little quieter and not volunteer for answering questions or reading aloud. The feedback mentioned not being afraid to call on students to answer questions instead of waiting for volunteers, something I found myself doing a lot during the teaching practicum. The students also got used to that and expected that I would call on anyone. This also lined up with the way the mentor teacher, Mr. Kahira, conducted his lessons so it was not a big change for students when I started teaching halfway through the school year.

I found that the Heart Rate Labs were very successful with English Language Learners as well. The introduction review vocabulary words that might be used and they were paired with a

picture or with the action of finding the pulse itself. The students were also working with a partner so they had to use the vocabulary and academic language in order to successfully complete the activity. Something that applied to all students, as well as the ELLs, was the requirement to use proper English and grammar when reading aloud and asking or answering questions. This helped them focus on the classroom being a different environment from their social lives and therefore a place that expected formal academic language, not slang and social language.

Feedback was given to the students regularly with written or spoken comments on homework, projects, and the Daily Lesson Introduction (Bell Work). On certain assignments or when a large number of students were unable to be in class due to sickness, weather, assembly, etcetera, resubmission and regarding for partial credit was offered. It was offered on the condition that the student was able to explain the answer they gave first and understand why it was incomplete or incorrect and then be able to fix it. This gave all students a second chance as well as gave them another opportunity to come to me and clarify something they did not understand. It also eliminated complaints from students about getting a low grade when they were given multiple opportunities to correct their mistake.

Evaluating the students on subject matter came mostly from activities and labs, however, those often had group work. Individual quizzes and tests were given sometimes paired with questions from the textbook. Appendix B shows the Midterm Exam that was given to all classes. The Midterm was given without the use of resources. Afterwards, the exam was gone through with the class question by question to give the students a chance to review the material and even

make an argument to eliminate that question because it was misunderstood or unclear by a majority of the class. This gave me and the mentor teacher the ability to learn question writing skills and how to be more clear in future exams or written materials. Another quiz that was given allowed students to use the textbook as a resource which helped them recall concepts from the visuals used during class. The figures below show the grade distribution from one of the open-book quizzes and the grade distribution from the heart rate lab activity (parts 1 and 2) from the Blue class, a class consisting of a lot of English Language Learners. Looking at this data, it seems that the activity using more group work, visuals, and a variety of teaching strategies led to higher achievement than a quiz, even though the quiz was paired with the textbook.

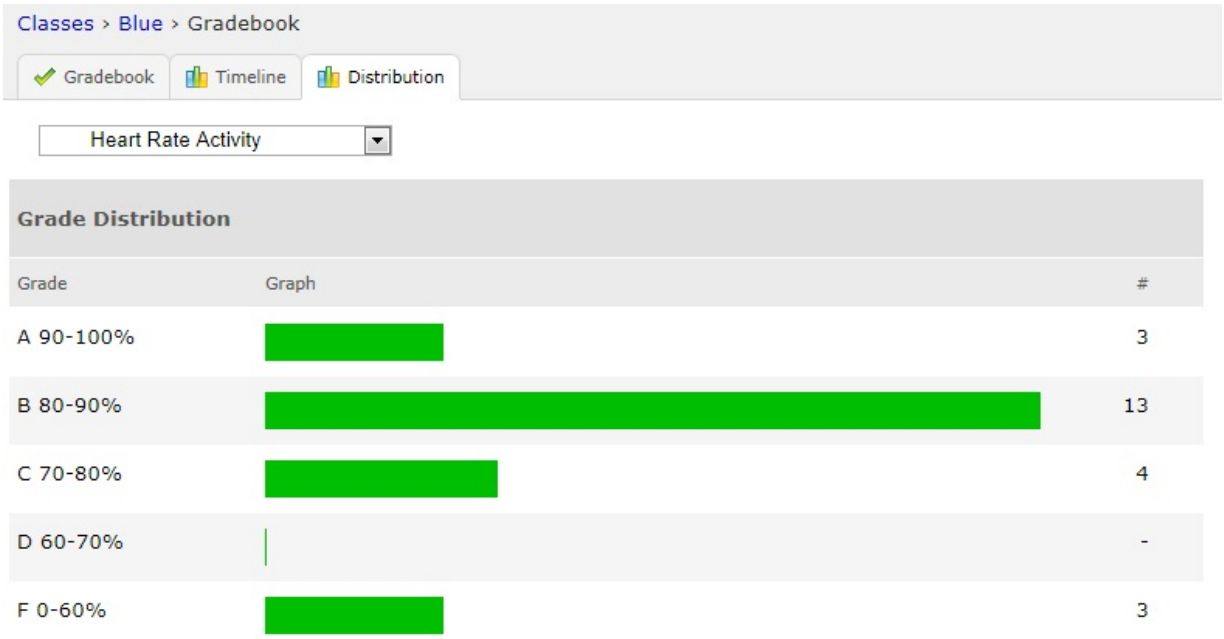


Figure 9: Grade distribution for the Heart Rate Activity for the Blue class

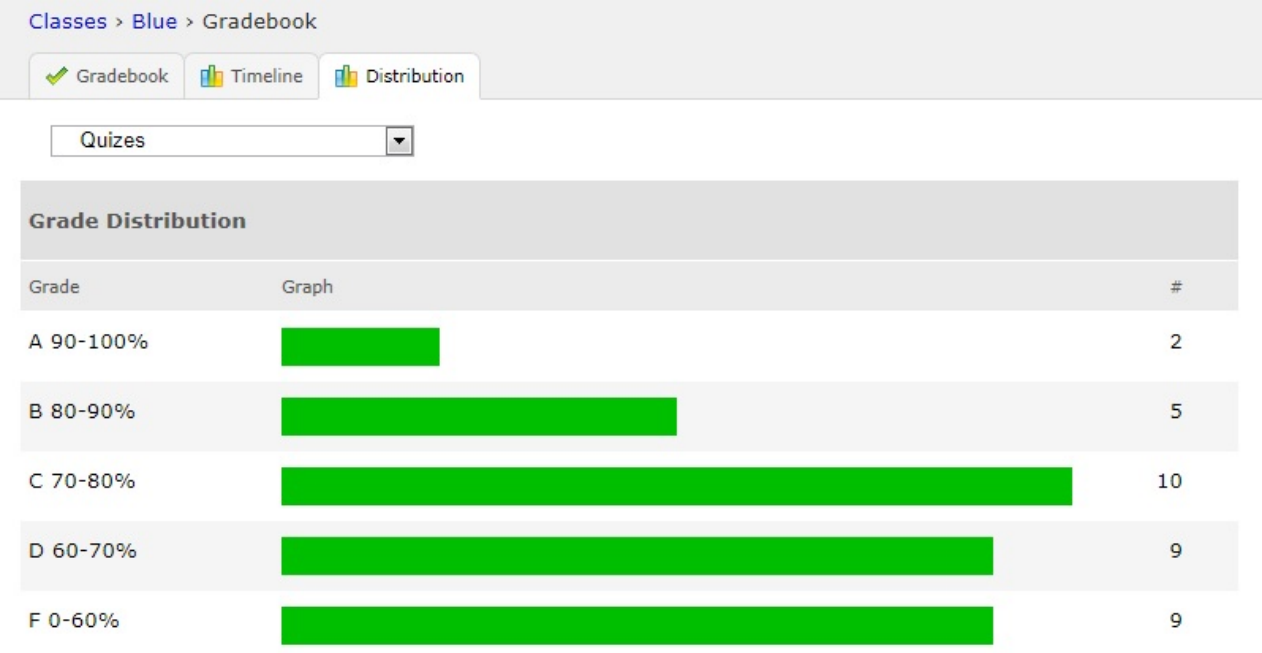


Figure 10: Grade distribution for an open-book quiz for the Blue class

This connection was only looked at for this class first because of the number of ELLs in it. But, after looking at the scores for the same two assignments for the other 3 classes, the pattern persists. The following figures show the data for the other three classes.

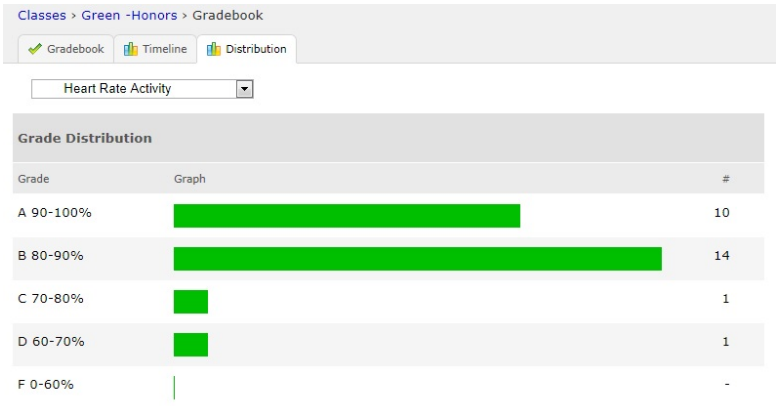


Figure 11: Grade distribution for Heart Rate Activity for the Green class

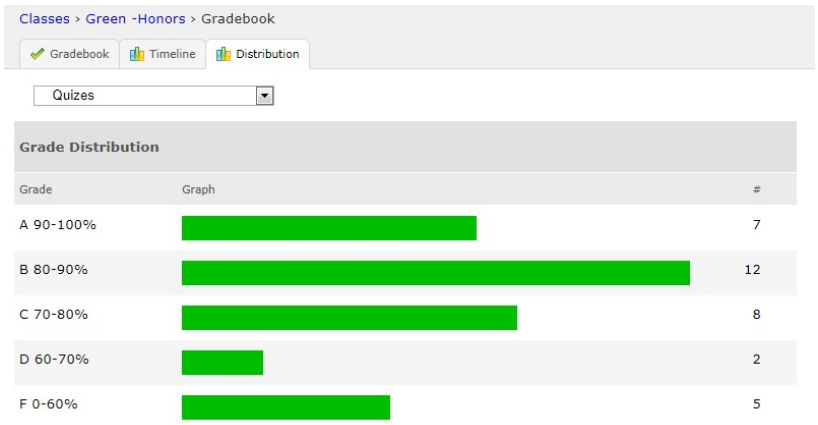


Figure 12: Grade distribution for an open-book quiz for the Green class

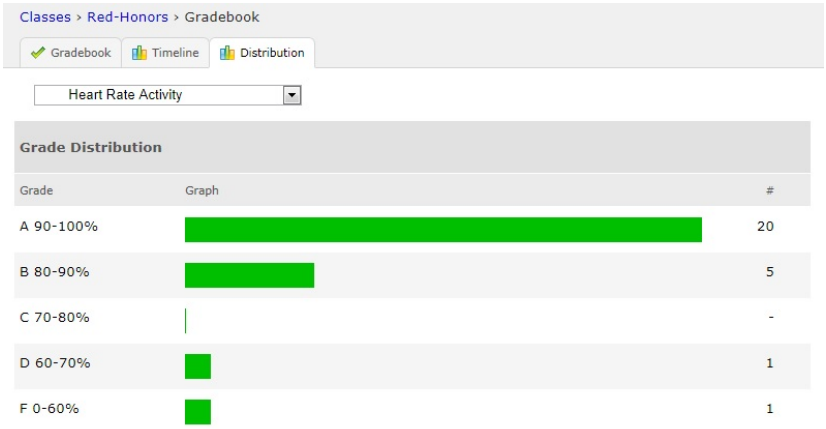


Figure 13: Grade distribution for Heart Rate Activity for the Red class

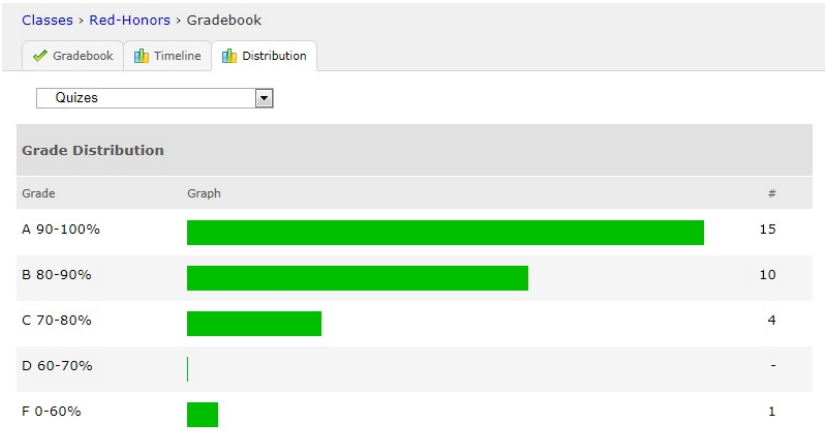


Figure 14: Grade distribution for an open-book quiz for the Red class

Figure 15: Grade distribution for Heart Rate Activity for the Yellow class

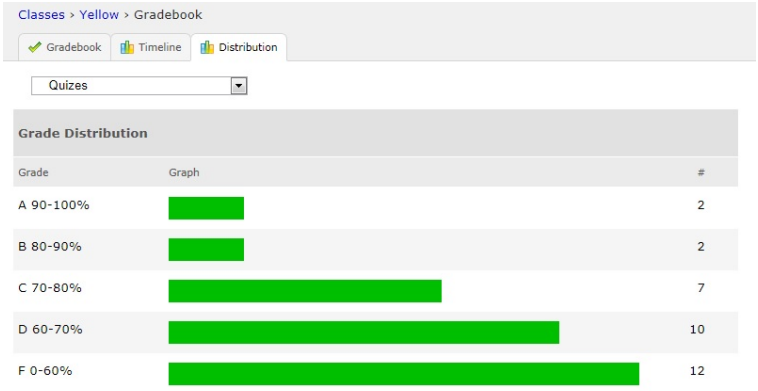


Figure 16: Grade distribution for an open-book quiz for the Yellow class

All of this information, as well as progress reports are available for the students, parents/guardians, and the school to show the level of achievement every student is at overall and for each assignment throughout the year. Not all students and parents have a computer at home so students were allowed to ask to check it on EnGrade.com at the end of class, during lunch, or during free periods as well as print out a copy to bring home to their parents. Figure 17 shows an example of a progress report omitting the student's personal information.

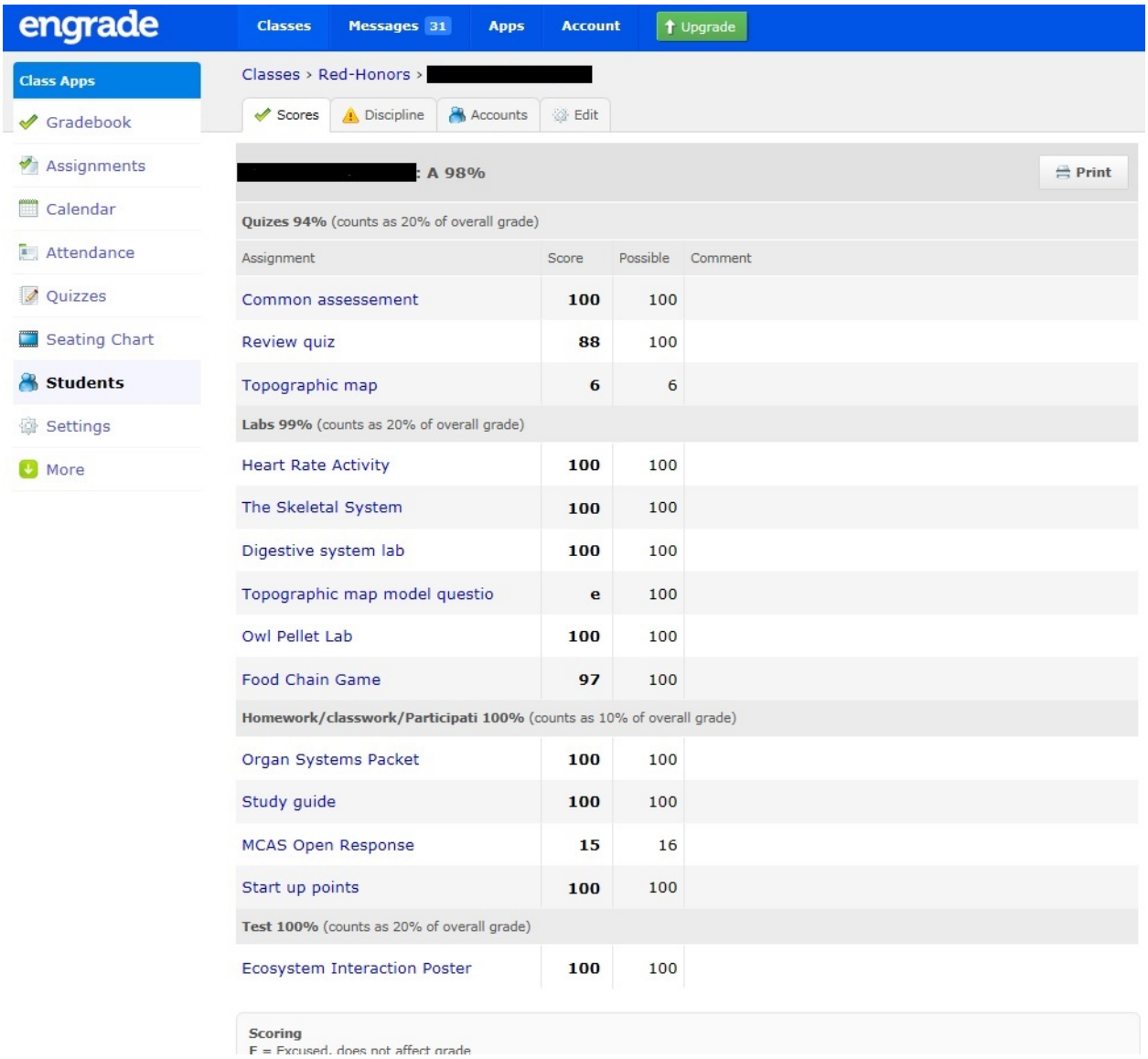


Figure 17: Progress Report from EnGrade with a list of all the assignments from Quarter 4

Chapter 5: Manages Classroom Climate

As a student, learning is maximized when the classroom atmosphere is controlled, safe, comfortable, organized, and quiet when necessary. Another part of the classroom experience that helped me was having a good rapport with my teacher. During the teaching practicum, I tried to recreate that type of environment so my students had the best place possible for learning.

Coming into the classroom halfway through the year was difficult because the students had already gotten comfortable to Mr. Kahira and his way of running the classroom. My expectations were not much different from his, but the students saw me being unfamiliar with the school as an opportunity to goof off. I made it an effort to establish my expectations immediately and that I was to be taken just as seriously as they do with him. The classroom etiquette was to remain the same and respect is reciprocated with everyone, students and teachers.

One problem I came across as being difficult was being strict. I do not like being harsh. I prefer, and I'm sure the students preferred, when I can talk *with* them instead of talking *at* them. Friendly and comfortable communication creates a more laid back and relaxed environment so the students aren't stressed or tense all class period. However, this could be taken advantage of very quickly. The second that happened, I immediately took action and made sure it was clear that I would not allow that type of disrespectful behavior. Otherwise, if one student was allowed to do it, all of them would think it was okay. For example, toward the beginning of my teaching hours, there was an emergency where Mr. Kahira had to leave the room because a

student needed assistance to the nurse's office. The students knew what they had to be working on and yet they all started talking and goofing off. I was able to gain control back and get them to focus on the assignment just by telling them that the routine and agenda does not change when Mr. Kahira leaves. They soon realized that it was more enjoyable having me teach when they behaved the way they're supposed to in the first place.

As stated previously, many of the labs and activities required students to work as a group or with a partner. Pairing students strategically was a great way to maintain a good learning environment. Figure 18 shows the assigned groups for each class used for multiple group projects that grouped students together of different levels so students can help and learn from each other but also keep students who will goof off together separate.

BLUE

Team 1	Team 2	Team 3	Team 4
Jenik	Noah	Oscari	Luis R
William	Alex R.	Dyllan	Timur
Marc	Joseph Q	Stephan	Maria
Danny	Michael Sh.	Chino	Matt B.

Team 5	Team 6	Team 7	Team 8
Xavier V.	Melissa	Rita	Jennifer
Adrien	Joshua	Alex A.	Kayliana
Joseph D.	Nyisha	Valentina	Iyanna
Chris G.	Geo	Kaitlyn	Leivy

RED

Team 1	Team 2	Team 3	Team 4
Rachael	Carmen	Gianna	Cassandra
Alex	Matt	Michael St.	Michael Sp.
William B.	Tarick	Paige	Zoe
Victoria	Noah	Brittany	Colin

Team 5	Team 6	Team 7
~~Victoria~~	Ethan	Patrick
Jacob	Hannah	Yllikida
Olivia	Aly M.	Keara
~~Argent~~	Rosie	Prescott
Justin		

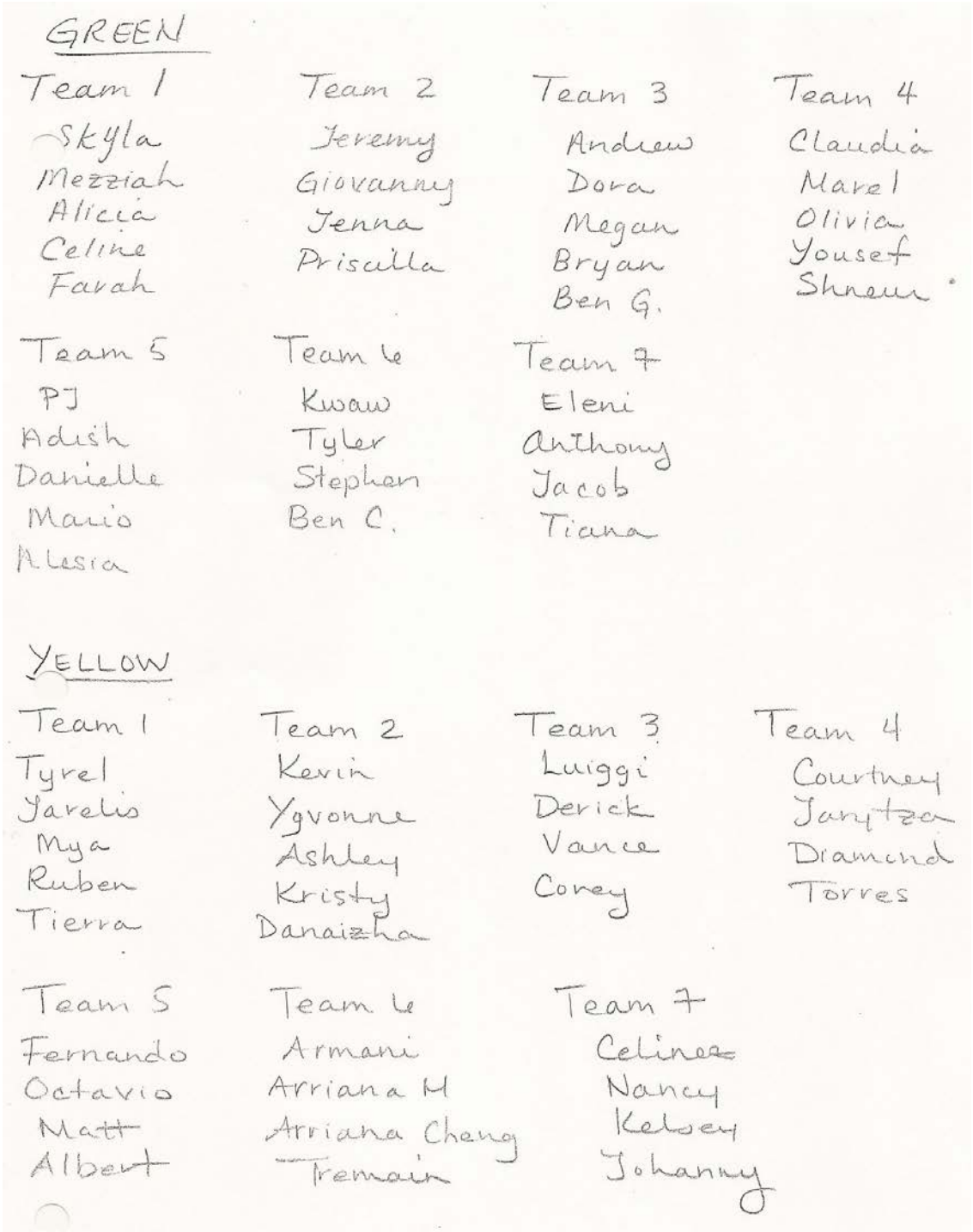


Figure 18: Group Assignments for all classes

During regular lessons, direct instruction, and individual activities, classroom climate was controlled by using a seating plan for each class. Often, students would come in at the beginning of class and go sit near their friends and talk, do work for other classes, or goof off.

One of the most challenging classes with that in mind was the Yellow class. The Yellow class was there in the morning every day for homeroom and attendance and then Life Science would start at 9:00am. The students in this class had trouble transitioning from homeroom to class time and thought homeroom didn't require that they sit in their assigned seats. The following seating plan was developed that became a part of their routine coming into the classroom for homeroom and class time and it made up for students needing certain accommodations as well as kept rowdy students away from each other. The desk in the front of the room where the teacher would sit was kept open in the case that a student needed to be moved, couldn't read something on the board, or was misbehaving.

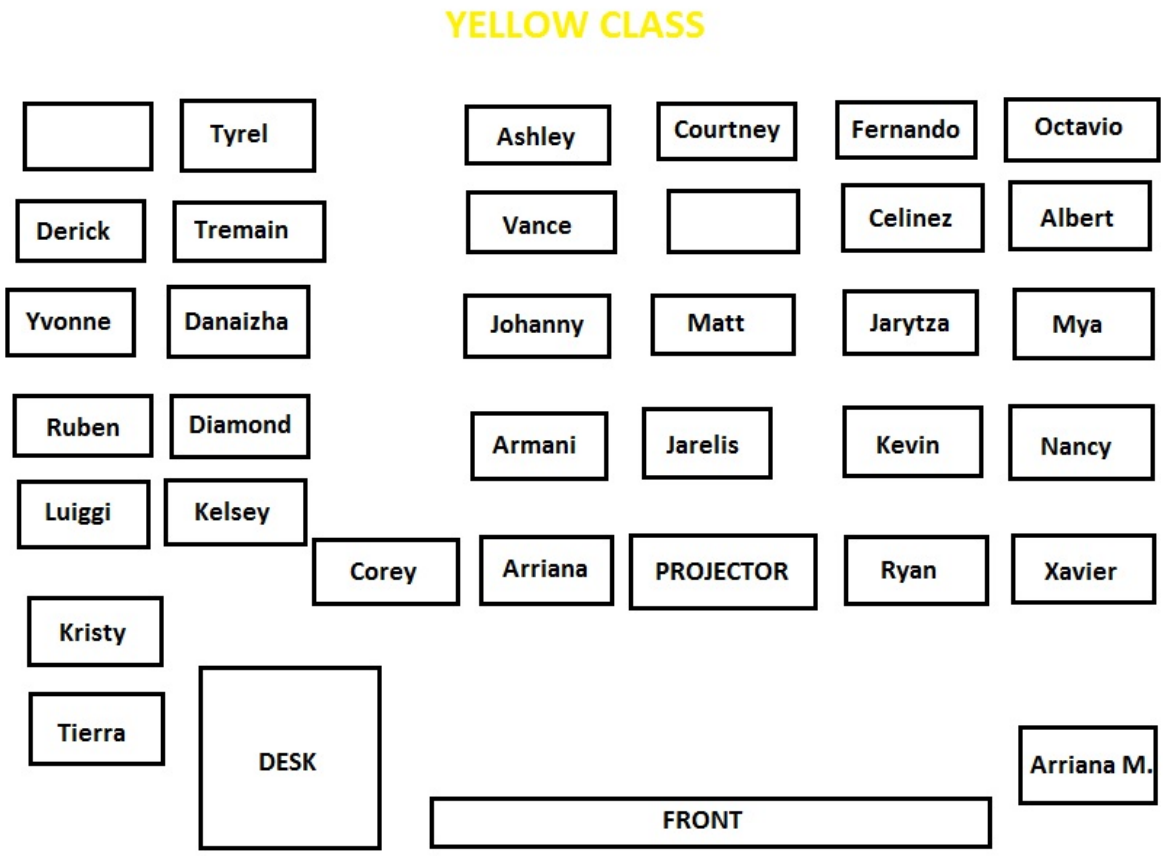


Figure 19: Yellow class seating plan

Other than the incident with the student needing to go to the nurse there was only one other occasion where the classroom climate got out of control temporarily. A student from another cluster (not one of Mr. Kahira's students) came in with a text book and began chasing one of my students around the classroom threatening to hit him because he called her a name in a previous class. Mr. Kahira handled the situation appropriately and the student was given in-school suspension for a few days as punishment. But in this case, the agenda board, the routine in place, the seating plan, and the other methods used to manage classroom climate did not help prevent this situation from occurring. There was no other instance where Mr. Kahira and I needed to take other actions to calm down students' negative behavior in the classroom.

Chapter 6: Promotes Equity

Part of having a learning environment and classroom atmosphere that is comfortable for students and leads to success is making sure they feel that it is a level playing field that is fair for everyone. This means all opportunities and materials are available to all students. This could come from direct instruction, the teacher making themselves available for answering questions, clarifying anything and giving extra help when needed, games and competitions, and teamwork.

One attitude that I had and shared with my students was that everyone, including the teacher, was learning something every day, and that everyone in the room could teach someone else something useful. The class is working together to learn. As the teacher, I made opportunities available or guided students to the available resources. Sometimes this came from fellow classmates where a different approach, an acronym, or a different trick to remember something could be passed on to another student. Study buddies outside of school or during free periods was also encouraged. I did not want the students to think that Mr. Kahira and I were the only people that could teach them something.

A phrase I repeated often to the students was “Everyone makes mistakes, even the teachers.” Many students were self-conscious about raising their hand to volunteer to read, answer a question, or share something because if they got it incorrect, they might get made fun of by fellow classmates. That bullying behavior was not tolerated. Putting in the effort is what lead to achievement, not being perfect all the time at everything. One student who was an English Language Learner was afraid to read aloud because he would mispronounce words and the

students would sometimes laugh at him. One day I encouraged him to try anyways because practicing will help him with pronouncing words he doesn't know. I told him and the rest of the students that every unit will have new vocabulary words, not just in school, but in the "real world" too and that I don't expect them to know every word in the universe. So if anyone didn't know how to pronounce a word, they were allowed to stop and ask me first, pronounce it themselves, and then resume reading aloud. That student I mentioned who was too scared before ended up volunteering almost every time to read aloud.

One project completed was the Ecosystem Poster (Figure 1) where students worked in groups to design an ecosystem including all five different types of relationships between organisms. They were allowed to draw any combination of animals even if they weren't from the same area to encourage students who like being creative and artistic. Although, some students were vocal that they weren't artistic and that they didn't want to get a bad grade because they didn't have that type of talent like some other students. I assured them that the rubric included creativity and the organisms' relationships, not being Michelangelo or Picasso. An example poster was also drawn for them so they knew that it did not have to be perfect, as long as it showed that they understood what the relationships meant. Then the highest scoring posters were hung up in the classroom, not necessarily the ones that looked the best artistically, but the ones that considered everything on the rubric and were the most creative.

An important part of equity in the classroom is also teaching students the extension to their community, the state, the country and the world. One lesson about Classifying Life was related

to this idea by highlighting the importance of a universal language, binomial nomenclature, that everyone has access to in order to classify organisms locally, nationally, and globally.

Chapter 7: Meets Professional Responsibilities

Having a good rapport with your students where you can be friendly with them is good but the responsibilities both moral and legal that come with being a teacher need to come first. Speaking with students outside of school via Facebook, texting, or other social media is inappropriate and was avoided 100% during and after the teaching practicum. If a student wanted extra help, I offered to stay in the classroom during lunch time, before school started and after school to work with them. Extra tutoring was offered but the parents or guardians had to contact me about it, not the student. All progress reports were available on EnGrade for parents to view at home, and paper copies were printed out for students periodically for them to take home to their parents in the case that they did not have a working computer at home.

When students did not come in for help during the free/preparation periods, grading, collaboration, and cluster meetings with other teachers of different subjects took place. Many days I would stay a little later with Mr. Kahira or stay during the prep periods to plan activities and write quizzes together. There were also days where I would bring home lots of papers or posters to grade. In the beginning, this helped a lot with learning the names of all my students and the strengths and weaknesses of each class.

Respect for other teachers, administration, and students was shown. It was also vocalized as an expectation of all students to treat others with respect, regardless of who they are. The Internet policy for Worcester Public Schools was obeyed and any students who used the computers for anything other than school purposes were reminded of the rules.

Teachers are to show their knowledge and enthusiasm for the subject matter they are teaching to their students. When starting at Forest Grove, upon introducing myself to the students I explained what I was studying at WPI and what I wanted to do when I graduated. On many occasions, the students would ask more questions about college and science because they had a relative or role model who was a scientist or engineer. During lessons, I often sprinkled in some information about current discoveries in science that were related to the unit we were studying at the time. I applied what I learned in the Teacher Preparation Course as well as the knowledge obtained from the other requirement courses in the Teacher Preparation Program, Educational Psychology and Cultural Psychology. Figure 8 shows a Plus/Delta form from the Teacher Preparation Course at WPI. The Plus column shows positive observations from the lesson in each standard and the Delta column shows this that might need to be modified or suggestions that might work better in each standard. The form in Figure 8 was filled out during the first lesson that I taught in the course covering balancing chemical equations and defining different types of reactions for High School Chemistry. Chapter 1: School Background is the Pre-Qualifying research paper that was written before starting the Teaching Practicum. This allowed me to study as much as possible about the school and the students before starting to observe and teach there.

The courses I have taken at WPI, not just the ones that are part of the Teacher Prep Program, but the courses that would help teach Life Science subjects were very helpful. Appendix C shows my Unofficial Transcript from WPI.

Chapter 8: My WPI Experience

At Worcester Polytechnic Institute, I learned that the Teacher Prep Program offers courses that prepare students to become teachers. Cross Cultural Psychology, the Psychology of Education, and the Teacher Prep course all were extremely useful in helping me take a glimpse inside the teacher's world as well as learn different techniques that would be helpful in a Worcester Public School. The psychology courses opened up the students' eyes to different cultures, different learning styles, and every school is different. The content being taught is equally important to the diversity, cultures, and mindsets every student brings with them into the classroom. Teachers are not just people who know a lot about their subject matter, they can be friends, counselors, role models, and more. A successful teacher knows how to balance all of those elements.

Content wise, WPI prepared me to teach the topic of Life Science very well. Life Science touches on many areas of life including chemistry, physics, mathematics, and biology. The courses I've taken (see Appendix C for Unofficial Transcript) all dove deeply into those areas and allowed me to see the same thing with different viewpoints. The general chemistry, calculus, biology, genetics, and physics classes as well as the numerous labs I completed all equipped me with the foundation to build teaching skills on.

Familiar vocabulary and problem solving techniques are very important for any field. Learning those as well as helpful ways to remember terms was helpful with my eighth graders. WPI puts a lot of emphasis on group projects and team work. When someone gets a job, it rarely only involves them. It extends to a team, a leader, a boss or supervisor, a lab or a company. Learning

the importance of being on a team helped me with leadership skills, time management techniques, organization, and communication. Bringing that information into the classroom for the younger students helped improve social skills, establishing academic language, organization, and time management for them. The earlier those skills can be learned and worked on, the easier it will be to transition to high school, to college, to a job, and beyond.

WPI is not a very large school, but compared to my high school, it is gigantic. With the large number of student interactions, the plethora of activities one can get involved in, and the heavy work load, I had to learn how to be independent, confident, and self-driven. Confidence in particular helped incredibly during the teaching practicum. It helped with separating myself from the students, which was difficult already because of the closeness in age.

A majority of the professors for the courses listed in Appendix C very strategically placed current applications and recent discoveries and developments into the lessons that kept the students' attitudes from going down the dark road toward "I'm never going to use this stuff." Taking a subject matter that I am passionate about and adding that to the lessons helped reach some of the students whose favorite subject was definitely not science. The students at WPI all want to be here and chose their field of study for a reason. It is difficult telling middle school students who "have to" be there the importance of science when it is their least favorite class. So being able to make it fun and interesting as well as showing them how it already applies to their lives is key.

I have now been a student for almost 17 years. That is about 80% of my life. Clearly I am very used to how being a student works. The courses in the Teacher Prep Program specifically

helped with seeing different perspectives and for the first time seeing the teacher side of school. Reflection on our learning styles when we were younger and now was encouraged as well as thinking through a classroom routine and seeing *why* everything is the way it is.

An opportunity I received from WPI that some of the other Teacher Program students may not have experienced was the AVID Tutoring Program. This program was a community service opportunity where some college students would visit high schools in Worcester during the AVID class period and help students with a variety of topics, history, calculus, Spanish, and more. The school I volunteered at was South High School and I was there for a semester. This gave me a lot of insight because it is an inner city school much different from the schools I attended, mostly with cultural differences, language barriers, and diversity.

Those three hours a week as well as the Teacher Prep Program courses opened my eyes up to the teacher's world quite a bit and I saw many of the frustrations and rewards that can come from teaching.

Chapter 9: The Classes at Forest Grove

Forest Grove Middle School has 7th and 8th graders and in total approximately 1,000 students. Of those students, I have four classes, about 110 students. The classes ranged from 23 to 31 in size, much larger than the recommended Teacher to Student ratio of 14 to 1. Two of the classes were honors, red and green, and the other two were mostly students with special needs, health issues, or English Language Learners.

One student, Joseph, needed to sit in the front row. He was on the Autism spectrum as well as had severe ADHD. Some of his challenges despite how bright he was were staying focused, not talking out of turn, and behaving. Another student, Kristy, was an English Language Learner. She was very smart but extremely shy. If she had a question, she would not ask it. During group work, she would do all of the work and sometimes the other group members knew she wouldn't speak up about them slacking. Her academic language needed work but outside of class, at lunch for example, she was very social. A third student I had, Nancy, was very bright and a very good student but was extremely limited to her physical activities. A year before, she missed a lot of school because one of her kidneys failed. The interesting thing about Joseph, Kristy, and Nancy is that the three of them were all in the same class. In fact, at one point, the three of them worked on a group assignment together. These examples show how diverse the student population could be even in the same class.

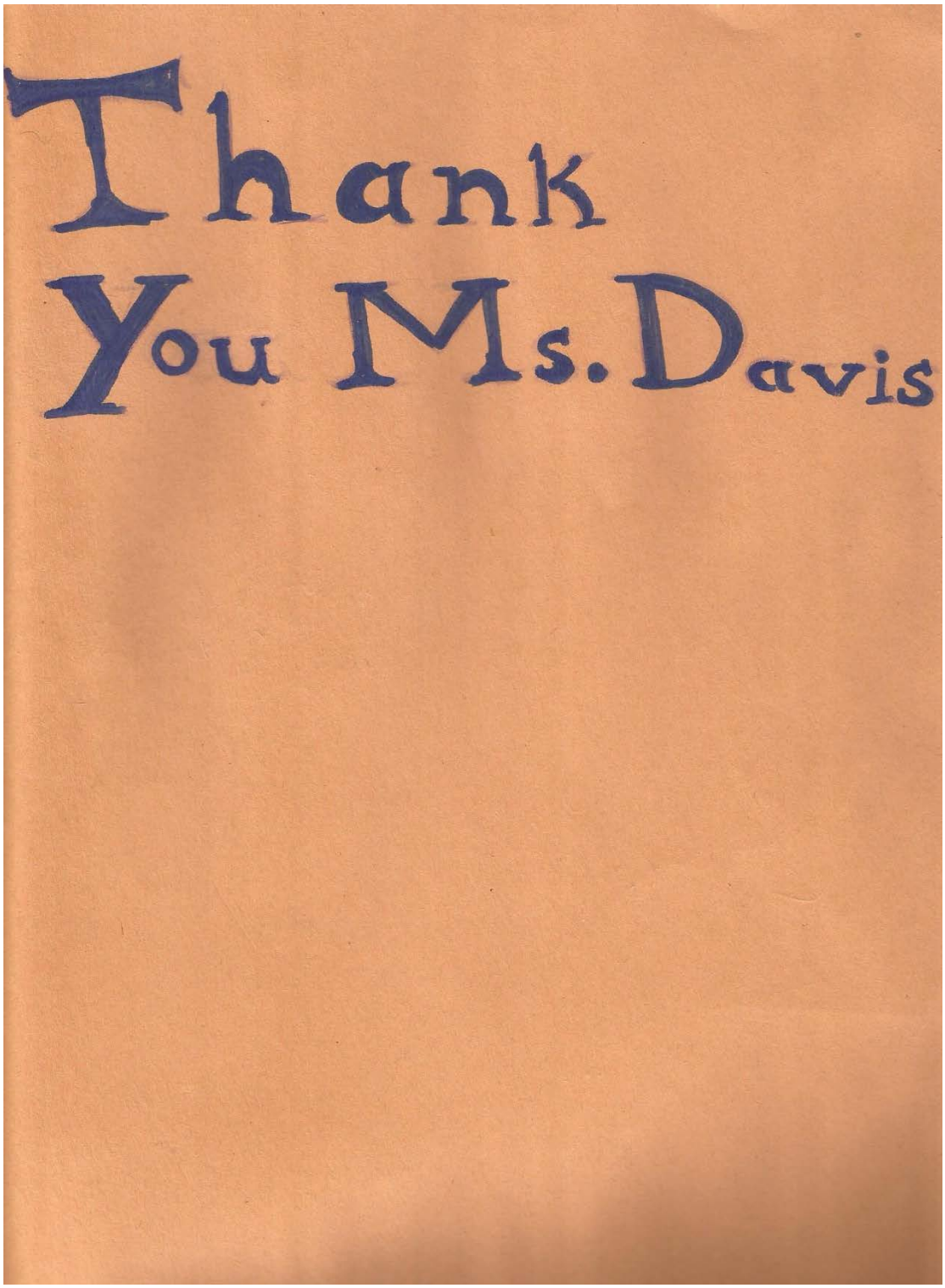
There were four other students in the same class, Luiggi, Kevin, Tierra, and Tremain, all who were students with behavioral issues. This presented a lot of challenges because they would often talk out of turn, bully other students, be very disrespectful, and sometimes would be

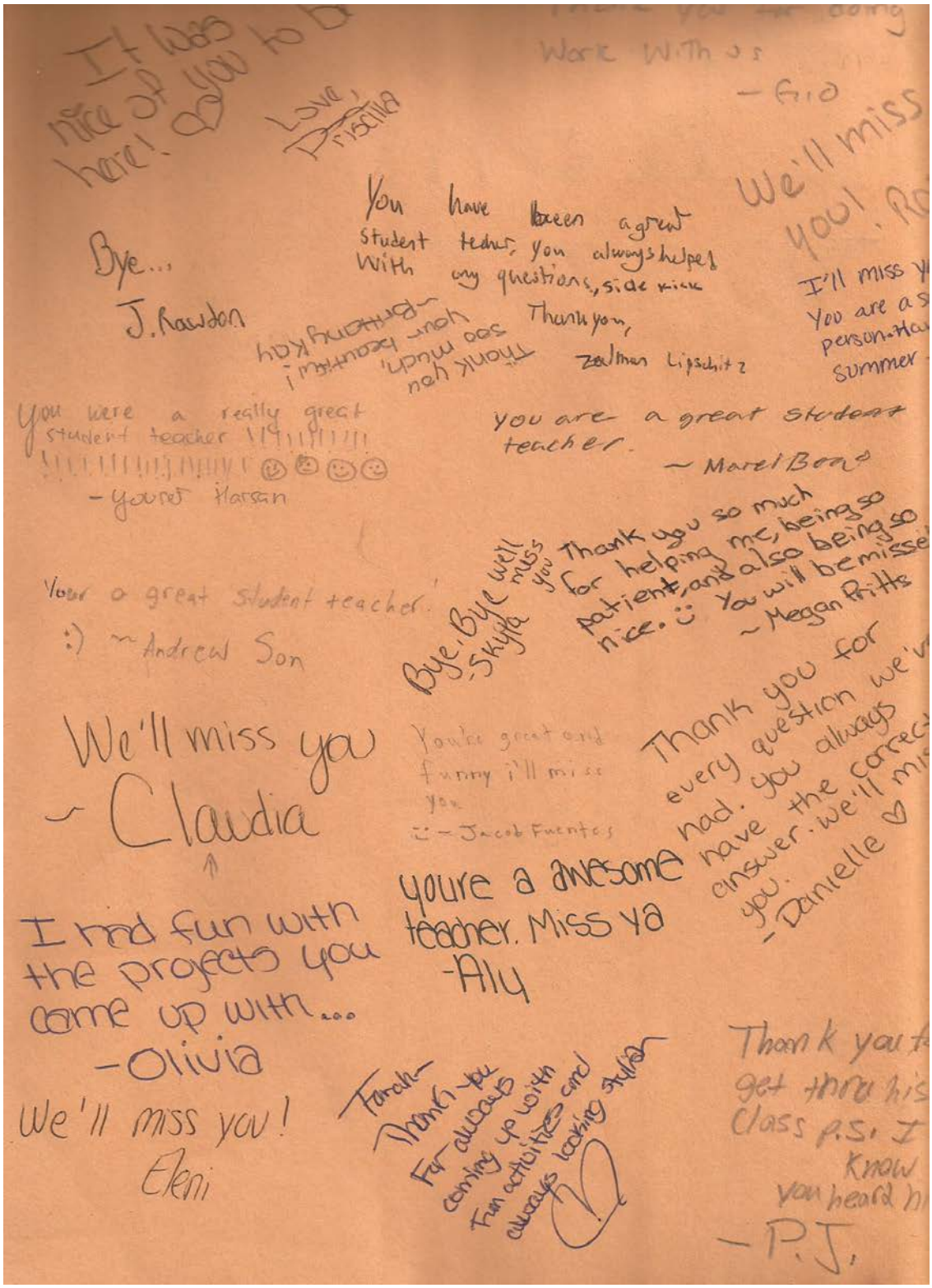
violent. Two of the students were suspended for a week for starting a fight at school. The lessons then had to keep these students involved enough to keep them from their poor behavior but also accommodate to the students with special needs or language barriers.

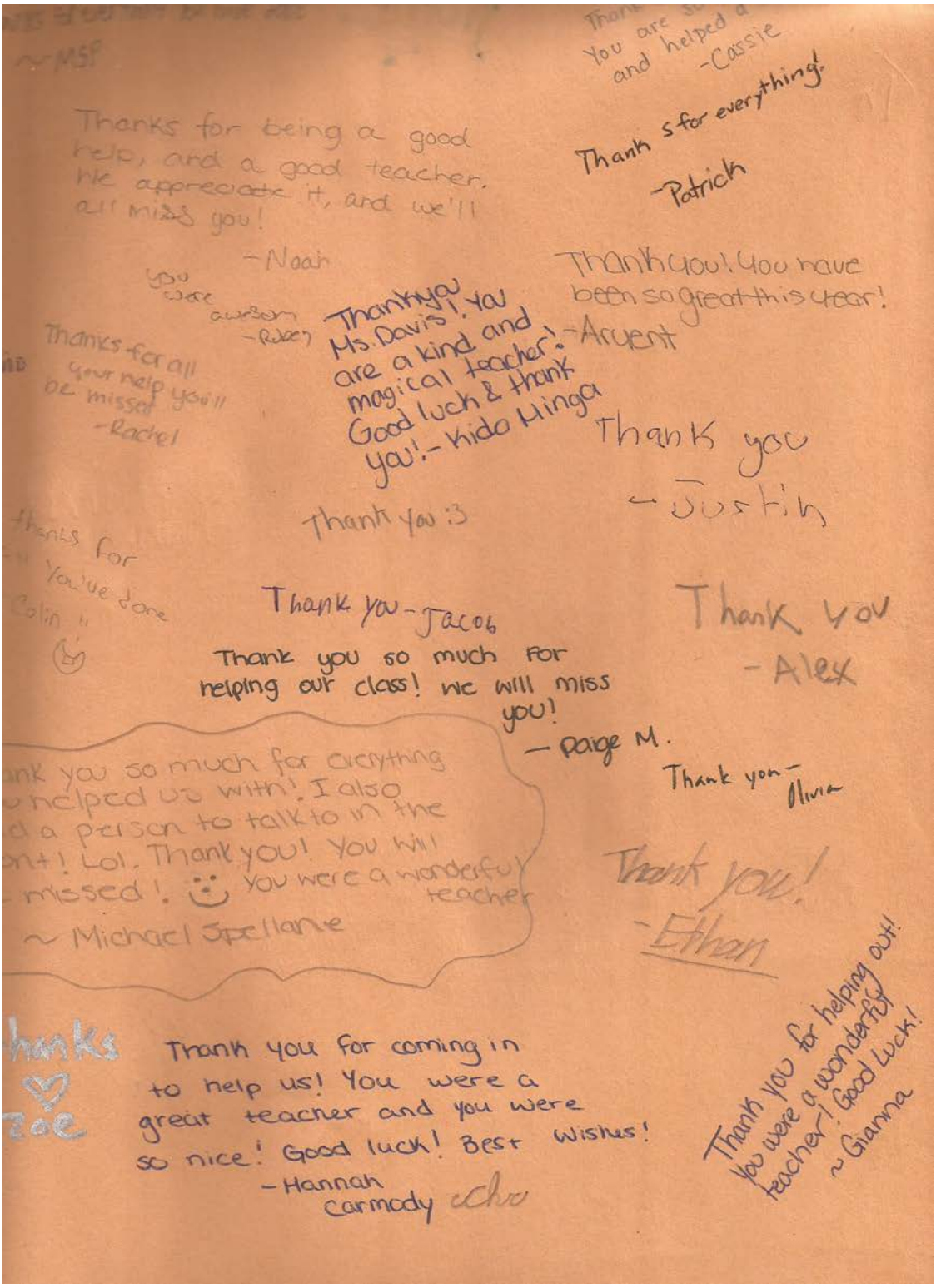
Some of the other challenges were the transition between Mr. Kahira and me midway through the year, the age closeness with the students, and discipline. The students were already used to Mr. Kahira and how he ran the classroom so starting half way through the year with someone new, around the holidays and closer to the MCAS testing was difficult. Being so close in age with them was difficult too because the students treated me more as an older sibling or friend instead of an authority figure. Disciplining them appropriately when not following the rules of the school and classroom helped with that distinction right at the beginning of the teaching part of the practicum.

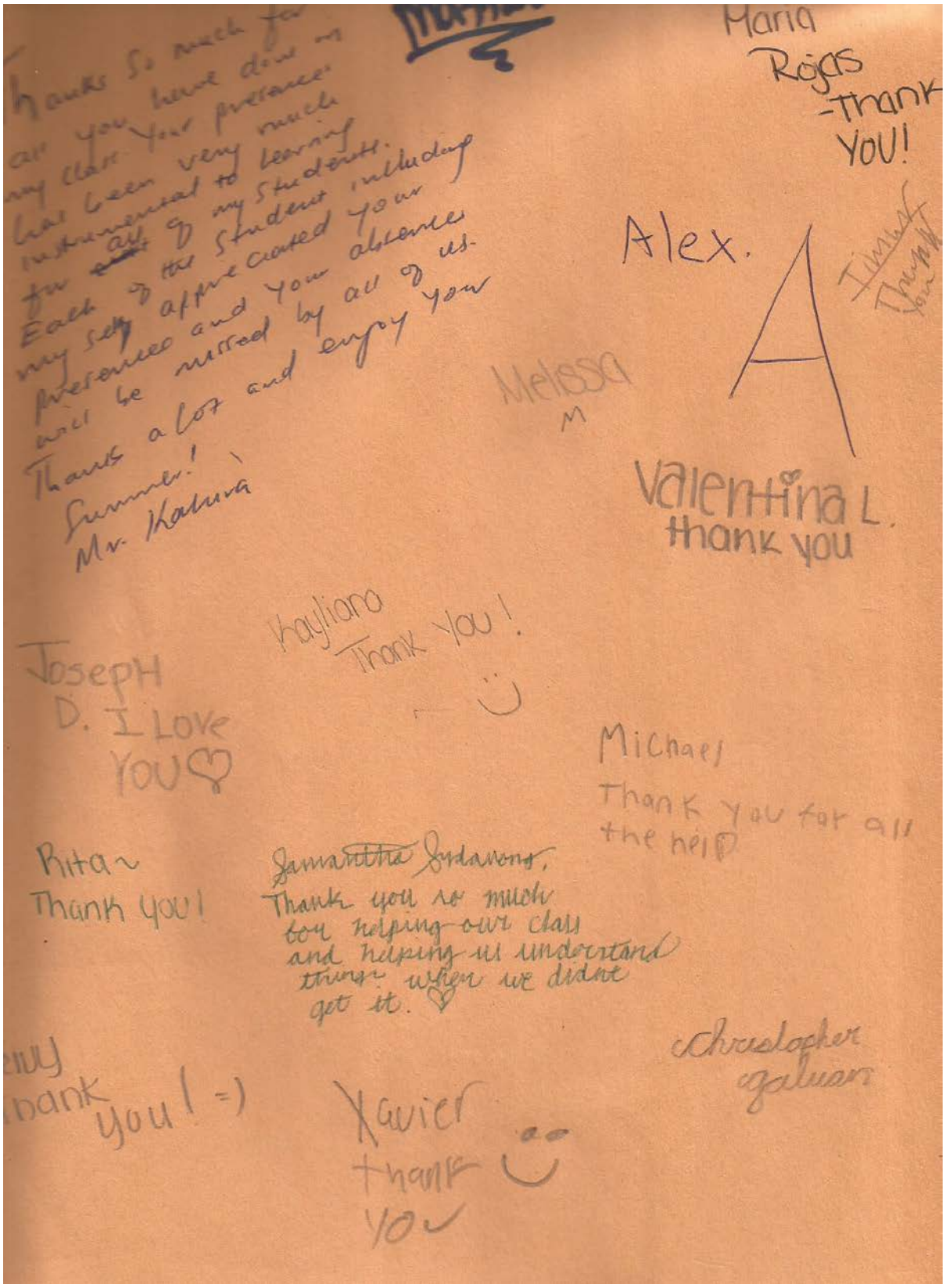
It was not all difficult though. There were a lot of very rewarding parts of the practicum. I learned a lot of successful tricks and teaching techniques, for example Socratic teaching and student teacher dialogue. I also established a lot of good relationships with the students where they trust me, my judgment, they appreciate my help, and they look up to me as a role model. It was also amazing seeing certain students improve so much. A boy named Xavier had a lot of trouble with motivation and having a positive attitude with things he did not understand. I was able to help him by guiding him to the correct answer or showing him that he knew the answer already and did not really need my help, even that he had an understanding strong enough to help the other students. By the end of the year, most of the times he asked me for help were to clarify instructions instead of ask for the answer. Another student, Nyisha, had a similar

problem related more to self-confidence and esteem. She was shy in front of her classmates and did not want to get the answer wrong and be embarrassed. Guiding her to the right answer using the knowledge she already had and showing her she knew it already helped her in the same way as it did for Xavier. A different student named Joseph was an English Language Learner and he was very nervous about reading aloud from the textbook or any packets we used. I would ask for volunteers and often no one in his class would raise their hand. One day I chose Joseph and told him and the rest of the class that even I mispronounced words when I read so if they don't know one, just try it or they can ask me before continuing reading. He agreed and did an excellent job. The very next day when we did more teacher guided reading, he volunteered to read a section out of the text book and continued to volunteer for the rest of the year. It was evident that his confidence increased as well as his trust and comfort with me being his teacher. Those three students along with the majority of the other classes made me a card on my last day of school with them that really made the experience worthwhile. Seeing in their academic and social achievement and feeling like I'll miss them when I leave I'm sure is what a teacher hopes to achieve with all students.


Thank
You Ms. Davis


It was nice of you to be here!
Love, Krisha
Work With Us
-G.O
We'll miss you! R
Bye...
J. Rawdon
You have been a great student teacher, you always helped with my questions, side kick
Thank you,
Zalman Lipschitz
I'll miss y
You are a s
person. Ha
summer
you were a really great student teacher
-Yosef Hasan
you are a great student teacher.
~ Marel Bo
Bye, Bye will miss you
-Skyla
Thank you so much for helping me, being so patient, and also being so nice. You will be missed
~ Megan Pitts
Your a great student teacher.
:) ~Andrew Son
We'll miss you
~ Claudia
You're great and funny i'll miss you
:) - Jacob Fuentes
Thank you for every question we'v had. you always have the correct answer. we'll mi you.
-Danielle
I had fun with the projects you came up with...
-Olivia
youre a awesome teacher. Miss ya
-Aly
We'll miss you!
Ekni
For all
Thank you
For always coming up with fun activities and always looking stylish
Thank you f
get through this
Class P.S. I
Know
you heard h
-P.J.


~MSF
Thanks for being a good help, and a good teacher. We appreciate it, and we'll all miss you!
-Noah
You are s... and helped a
-Cassie
Thanks for everything!
-Patrick
Thank you! You have been so great this year!
-Arvent
Thanks for all your help you'll be missed
-Rachel
Thankyou Ms. Davis! You are a kind and magical teacher! Good luck & thank you! - Kida Hinga
Thank you
- Justin
Thank you :3
Thanks for
You've done
Colin
Thank you - Jacob
Thank you so much for helping our class! We will miss you!
- Paige M.
Thank you
- Alex
nk you so much for everything helped us with! I also d a person to talk to in the n+! Lol. Thank you! You will missed! You were a wonderful teacher
~ Michael Spellane
Thank you!
- Ethan
hanks
Zoe
Thank you for coming in to help us! You were a great teacher and you were so nice! Good luck! Best Wishes!
- Hannah Carmody
Thank you for helping out! You were a wonderful teacher! Good Luck!
~ Gianna


Thanks So much for
are you have done in
my class Your presence
has been very much
instrumental to learning
for all of my students.
Each of the student including
my self appreciated your
presence and your absences
will be missed by all of us.
Thanks a lot and enjoy your
Summer!
Mr. Kaluva
Maria
Rojas
-Thank
YOU!
Alex.
A
Melissa
M
Valentina L.
thank you
Kayliana
Thank You!
Joseph
D. I Love
YOU
Michael
Thank you for all
the help
Rita~
Thank you!
Samantha Jordanova,
Thank you so much
for helping our class
and helping us understand
things when we didnt
get it.
Christopher
Galvan
Xavier
thank
you

An extra opportunity I had while at Forest Grove was to give a talk to some of the reading students who had difficulty with dyslexia. While my students were taking a test one day, Mr. Kahira told me to go with some of the students to another classroom so it was quieter for them to take the test. The classroom I went to was the reading class. I offered to help the teacher grade some of the reading MCAS practice questions and while speaking with her, I mentioned that I struggled with MCAS because of my dyslexia as well. She asked me if I would come in another day and talk to some of her reading students about it because they were feeling worried and stressed about the MCAS exams approaching. I came in and talked to them about what I study at WPI, biochemistry, and what type of reading and writing I do on a daily basis. I also mentioned some of the challenges I faced when going through elementary, middle, and high school and how there weren't any accommodations for me. They asked me some questions and by the end they felt a lot better about it knowing that I was able to overcome it and even flourish. They also found comfort knowing I was a teacher in training. Although it was not what I was at Forest Grove to do, it was one of the most rewarding experiences that occurred while I was there.

Conclusion

Despite the challenges and difficulties, this was a very rewarding and enlightening experience. Tutoring and helping my younger brother with his homework was not even close to what a teacher needs to be able to do. Although, those skills were very helpful paired with what I learned from WPI. In reflection, I believe I have achieved competence in the five standards and understand what is required to be a teacher. It was extremely enjoyable even on the most difficult or long days. I think being able to explain a difficult concept and help with understanding something is one of my strongest attributes, a skill necessary in any field of study or environment, not just as a teacher but also in the field of biochemistry research where I hope to go in the future.

Appendices

Appendix A: Lesson Plans

Ecosystem Poster

ACTIVITY OBJECTIVE(S):

After this lesson, students will be able to

- Identify and describe the major types of interactions among organisms in an ecosystem
- Identify 3 types of symbiotic relationships
- Explain how an organism's adaptations help it survive in an ecosystem

ESSENTIAL QUESTIONS:

1. How do adaptations help organisms?
2. List and define the major types of interactions between organisms in an ecosystem.
3. What are the three types of symbiosis?

F.O.R.C.E Initiatives

F.O.R.C.E Strategy

Classroom: Students will use science journals to practice writing in content area to allow them to construct and organize their own thoughts and make inferences.

Students will also be engaged in share reading and discourse to reinforce the **F.O.R.C.E.**

F.O.R.C.E Cluster: Teachers will post materials in their rooms to reinforce F.O.R.CE strategies as well as use bell work activities to have student practice using testing language and terminologies.

MCAS Strategy: Students will be practicing on strategies of interpreting and understanding MCAS open response questions. Focusing on analyzing question and answer relationships by use of context clues to identify unfamiliar terminologies

Technology:

Overheard projector, in focus, laptops and web search

LEARNING ACTIVITIES:

- teacher-directed instruction
- lab investigation
- group discussion, questioning, or cooperative group learning
- science project
- reading and writing in the content area

CONNECTIONS:

MA Curriculum Frameworks

Science Standard: LS13. Give examples of ways in which organisms interact and have different functions within an ecosystem that enable the ecosystem to survive.

English Common Core:

RST 6-8.10 By the end of grade 8, read and comprehend science/technical text in the grades 6-8 text complexity band independently and proficiency

RST.6-8.9 Compare and contrast the information gained from experiments, simulations, video, or multimedia sources with that gained from reading a text on same topic

School Improvement Plan:

- Students will practice with weekly answering MCAS open response question
- Students will use graphic organizers
- Provide numerous opportunities for differentiated instruction

e.g. lab activity, teacher demos, connected reading assignments

- Students will practice on strategies of answering open response questions
- Students will learn problem solving skills.
- Students will practice on writing in the content area
- Students will practice data interpretations.

RESOURCES:

Prentice Hall Explorer series Textbook

Key Terms: natural selection, adaptations, Niche, competition, predation, predator, prey, mutualism, commensalism, parasitism, parasite, host, ecosystem, abiotic, biotic, symbiosis

Food Chain Game

ACTIVITY OBJECTIVE(S):

After this lesson, students will be able to

- Create a food chain and energy pyramid
- Identify producers, consumers, and decomposers in a food chain
- Explain the predation interaction and the direction of energy from one organism to another

ESSENTIAL QUESTIONS:

4. How does energy travel from one organism to another?
5. Why do you need more organisms on the bottom of the energy pyramid?
6. What ecosystem interaction do all food chains show?
7. What is the role of decomposers? Why are they important?

F.O.R.C.E Initiatives

F.O.R.C.E Strategy

Classroom: Students will use science journals to practice writing in content area to allow them to construct and organize their own thoughts and make inferences.

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MCAS Strategy: Students will be practicing on strategies of interpreting and understanding MCAS open response questions. Focusing on analyzing question and answer relationships by use of context clues to identify unfamiliar terminologies

Technology/Tools:

Laptops, web search: www.brainpop.com/games/foodchaingame

LEARNING ACTIVITIES:

- teacher-directed instruction
- group discussion, questioning, or cooperative group learning
- reading and writing in the content area
- visual representation
- conclusion questions

CONNECTIONS:

MA Curriculum Frameworks

Science Standard: LS13 (review); **LS14:** Explain the roles and relationships among producers, consumers, and decomposers in the process of energy transfer in a food web; **LS15:** Explain how dead plants and animals are broken down by other living organisms and how this process contributes to the system as a whole.

English Common Core:

RST 6-8.10 By the end of grade 8, read and comprehend science/technical text in the grades 6-8 text complexity band independently and proficiency

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- Students will practice on strategies of answering open response questions
- Students will learn problem solving skills.
- Students will practice on writing in the content area
- Students will practice data interpretations.

RESOURCES:

Prentice Hall Explorer series Textbook

Key Terms: food chain, energy pyramid, producer, consumer, decomposer, predator, prey

Heart Rate Lab

ACTIVITY OBJECTIVE(S):

After this lesson, students will be able to

- Identify the two most common places to take a pulse and take a pulse correctly
- Explain why heart rate increases or decreases during the day
- Identify the link between age and heart rate

ESSENTIAL QUESTIONS:

8. What are the two most common places to take a pulse?
9. What is the difference between a resting heart rate and an exercise heart rate?
10. Why does a person's heart rate fluctuate throughout the day?

11. Does heart rate relate to age?

F.O.R.C.E Initiatives

F.O.R.C.E Strategy

Classroom: Students will use science journals to practice writing in content area to allow them to construct and organize their own thoughts and make inferences.

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F.O.R.C.E Cluster: Teachers will post materials in their rooms to reinforce F.O.R.CE strategies as well as use bell work activities to have student practice using testing language and terminologies.

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Technology/Tools:

Stop watch

LEARNING ACTIVITIES:

- teacher-directed instruction
- lab investigation
- group discussion, questioning, or cooperative group learning
- reading and writing in the content area
- conclusion questions

CONNECTIONS:

MA Curriculum Frameworks

Science Standard: LS6. Identify the general functions of the major systems of the human body (digestion, respiration, reproduction, circulation, excretion, protection from disease, and movement, control, and coordination) and describe ways that these systems interact with each other.

English Common Core:

RST 6-8.10 By the end of grade 8, read and comprehend science/technical text in the grades 6-8 text complexity band independently and proficiency

RST.6-8.9 Compare and contrast the information gained from experiments, simulations, video, or multimedia sources with that gained from reading a text on same topic

School Improvement Plan:

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- Students will use graphic organizers
- Provide numerous opportunities for differentiated instruction

e.g. lab activity, teacher demos, connected reading assignments

- Students will practice on strategies of answering open response questions
- Students will learn problem solving skills.
- Students will practice on writing in the content area
- Students will practice data interpretations.

RESOURCES:

Prentice Hall Explorer series Textbook

Key Terms: heartbeat, heart rate, BPM, pulse, stroke volume, radial artery, carotid artery, resting pulse, exercise heart rate

The Skeletal System

ACTIVITY OBJECTIVE(S):

After this lesson, students will be able to

- Identify and name the bones in the human skeleton
- Identify the major functions of the skeletal system
- Explain the importance of joints in the body
- Relate the skeletal system to the other body systems and describe how they work together in the body

ESSENTIAL QUESTIONS:

12. What are the major functions of the skeletal system?
13. What are joints and how do they help the skeletal system and the body?

14. What other body system(s) help the skeletal system function?
F.O.R.C.E Initiatives **F.O.R.C.E Strategy** **Classroom:** Students will use science journals to practice writing in content area to allow them to construct and organize their own thoughts and make inferences. Students will also be engaged in share reading and discourse to reinforce the **F.O.R.C.E.** **F.O.R.C.E Cluster:** Teachers will post materials in their rooms to reinforce F.O.R.CE strategies as well as use bell work activities to have student practice using testing language and terminologies. **MCAS Strategy:** Students will be practicing on strategies of interpreting and understanding MCAS open response questions. Focusing on analyzing question and answer relationships by use of context clues to identify unfamiliar terminologies **LEARNING ACTIVITIES**: • teacher-directed instruction • group discussion, questioning, or cooperative group learning • reading and writing in the content area • science project • visual representation • conclusion questions

CONNECTIONS:

MA Curriculum Frameworks

Science Standard: LS6: Identify the general functions of the major systems of the human body (digestion, respiration, reproduction, circulation, excretion, protection from disease, and movement, control, and coordination) and describe ways that these systems interact with each other.

English Common Core:

RST 6-8.10 By the end of grade 8, read and comprehend science/technical text in the grades 6-8 text complexity band independently and proficiency

RST.6-8.9 Compare and contrast the information gained from experiments, simulations, video, or multimedia sources with that gained from reading a text on same topic

School Improvement Plan:

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- Students will use graphic organizers
- Provide numerous opportunities for differentiated instruction

e.g. lab activity, teacher demos, connected reading assignments

- Students will practice on strategies of answering open response questions
- Students will learn problem solving skills.
- Students will practice on writing in the content area
- Students will practice data interpretations.

RESOURCES:

Prentice Hall Explorer series Textbook

Key Terms: joints, skull, sternum, humerus, vertebrae, pelvis, radius, ulna, carpals, metacarpals, phalanges, femur, fibula, tibia, tarsals, metatarsals

Appendix B: Midterm Exam

Name Class Date

1. Which of the following keeps the planets in our solar system in orbit around the Sun?

A. atmospheric pressure B. gravitational force

C. electromagnetic energy D. thermal energy

2. Which of the following groups of organisms uses sunlight to convert carbon dioxide and water into sugar and oxygen?

A. carnivores B. decomposers

C. herbivores D. producers

3. Heat from deep in Earth's interior is transferred to its crust by which of the following?

A. conduction in the ocean B. convection in the mantle

C. radiation from the solid core D. evaporation at mid-ocean ridges

4. Which of the following is an example of a physical change but not a chemical change?

A. A log gives off heat and light as it burns.

B. A tree stores energy from the Sun in its fruit.

C. A penny lost in the grass slowly changes color

D. A water pipe freezes and cracks on a cold night.

5. The ocean water near the equator absorbs more heat throughout the year than ocean water near the North Pole. Which of the following best explains this difference?

A. The equator is closer to the Sun.

B. The equator has higher sea levels.

C. The equator receives more direct sunlight

D. The equator rotates more quickly on Earth's axis.

6. Which of the following is an example of the formation of a mixture?

A. rust forming on an iron nail

B. sugar crystals dissolving in water

C. sodium and chlorine forming table salt

D. hydrogen and oxygen reacting to produce water

7. Laura adds 50 mL of boiling water to 100 mL of ice water. If the 150 mL of water is then put into a freezer, at what temperature will the water freeze?

A. 0°C B. 15°C C. 37° CD. 50°C

8. Which of the following substances can be separated into several elements?

A. nitrogen B. zinc C. air D. aluminum

9. Which of the following lists is in order from smallest to largest?

A. universe- solar system-- galaxy

B. galaxy --solar system ---universe

C. solar system ---universe-- galaxy

D. solar system-- galaxy ---universe

10. Which of the following areas is most likely to form metamorphic rocks such as gneiss and schist?

A. a sea floor B. a windblown desert

C. a site deep underground D. a site covered by a glacier

11. Which of the following best describes the number of chromosomes in a normal human liver cell?

A. 23 pairs of chromosomes

B. 46 different types of chromosomes

C. 46 male chromosomes and 46 female chromosomes

D. 23 original chromosomes and 23 duplicate chromosomes

12. Which of the following is a characteristic of all chemical changes?

A. A different state of matter is produced.

B. Some mass is converted to energy.

C. Some form of light is given off.

D. A new material is formed.

13. What is the smallest unit of an element that still has the properties of that element?

A. an atom B. a compound C. an electron D. a molecule

1**4. Which of the following most likely causes Earth's inner core to be a solid?**

A. The pressure at the core is very high.

B. The metals in the core are very heavy.

C. The temperature of the core is very low

D. The chemicals in the core are very reactive.

15. Which of the following parts of a plant cell has a function that is most similar to the function of an animal skeleton?

A. cell membrane B. cell wall C. Chloroplast D. nucleus

16. Muscle cells need to quickly convert energy from food molecules into a usable form. For this reason, which of the following do muscle cells have in greater numbers than most other types of cells?

A. chromosomes B. mitochondria C. nuclei D. vacuoles

17. Which of the following is the most efficient way to transport large amounts of coal from a mine in Kentucky to a power plant in Arizona?

A. by ship B. by train C. by truck D. by airplane

18. Which of the following has changed over the last 200 years primarily due to human activity?

A. Earth's magnetic field B. the frequency of earthquakes

C. Earth's tectonic plate activity D. the composition of the atmosphere

20. Which of the following is produced when two or more elements combine in a chemical reaction?

A. atom B. compound C. mixture D. solution

21. Which of the following units best represents the density of an object?

A. kg B. hr C. m/s2 D. g/cm3

22. Which of the following statements best describes photosynthesis?

A. Carbon dioxide and water are turned into sugar and oxygen.

B. Sugar and oxygen are turned into water and carbon dioxide.

C. Oxygen and carbon dioxide are turned into water and sugar.

D. Water and sugar are turned into oxygen and carbon dioxide.

23. Human activity most likely contributes to which of the following changes on Earth?

A. an increase in the length of a day

B. a decrease in the number of volcanic eruptions

C. a decrease in the magnitude of large earthquakes

D. an increase in the amount of atmospheric carbon dioxide

24. Which body system typically recognizes, attacks, and destroys foreign cells or substances that may cause disease?

A. digestive B. excretory C. immune D. respiratory

25. A student prepared the following list of characteristics about a cellular organelle.

• present in animal cells

• present in plant cells

• Helps make energy available to the cell

Which of the following cellular structures is the student describing?

A. cell wall B. Chloroplast C. mitochondrion D. nucleus

26. What are the basic structural units of living organisms?

A. cells B. nuclei C. organs D. tissues

27. The Moon orbits Earth at a speed of approximately one kilometer per second. The Moon is kept in orbit by which of the following?

A. gravity B. lunar phases C. magnetism D. ocean tides

28. A researcher found shark fossils on top of a mountain. This evidence suggests which of the following about this region?

A. It was once below a waterfall. B. It was once part of a riverbed.

C. It was once covered by an ocean. D. It was once near a freshwater lake.

Appendix C: Unofficial Transcript

Unofficial Transcript

683441045 Angela M. Davis
Oct 10, 2014 03:42 pm

This is ** NOT ** an official transcript.

Please Note:

- Courses "in progress" appear at the end of this report.
- **For undergraduate activity,**
  1/3 unit activity is represented as 3.00 credit hours.
  1 Unit of activity is represented as 9.00 credit hours.
  Other unit values are represented proportionately.
  Information on minors and second majors is not displayed on this page.
  The undergraduate GPA is not reflected on the Transcript.
  The **'Grade Point Average for Passed Courses'** appears on the Degree Audit web page.

Institution Credit Courses in Progress

Transcript Data

STUDENT INFORMATION

Name : Angela M. Davis
Birth Date: Dec 22, 1992

Curriculum Information

Current Program
Major: Biochemistry

This is NOT an Official Transcript

DEGREES AWARDED

Degree Sought : Bachelor of Science **Degree Date:**
Graduation Status: Pending completion of Requirements
Diploma Name : Angela Maria Davis

Curriculum Information

Primary Degree

Major: Biochemistry

Sufficiency: CDR grade=B : Women at the WAM

INSTITUTION CREDIT -Top-

Term: Fall 2011

Major: To Be Declared

Subject	Course	Level	Title	Grade	Credit Hours	Start and End Dates	R	CEU Contact Hours
AR	2114	01	MDRN ARCHTR IN AMER:1750 & BYN	B	3.000			
AR	2202	01	FIGURE DRAWING	A	3.000			
CH	1010	01	MOLECULARITY	C	3.000			
CH	1020	01	FORCES AND BONDING	C	3.000			
MA	1022	01	CALCULUS II	C	3.000			
PE	1117	01	MISCELLANEOUS (Ballrm Dancing)	A	0.750			
PY	2718	01	FREEDOM AND EXISTENCE	B	3.000			

Term Totals (Undergraduate)

	Attempt Hours	Passed Hours	Earned Hours
Current Term:	18.750	18.750	18.750
Cumulative:	18.750	18.750	18.750

Unofficial Transcript

Term: Spring 2012

Major: To Be Declared

Subject	Course	Level	Title	Grade	Credit Hours	Start and End Dates	R	CEU Contact Hours
AR	2111	01	MODERN ART	A	3.000			
BB	1035	01	INTRO TO BIOTECHNOLOGY	B	3.000			

CH	1030	01	EQUILIBRIUM	B	3.000
CH	1040	01	DYNAMICS	C	3.000
ES	1310	01	INTRO TO COMPU AIDED DESIGN	C	3.000
PE	1117	01	MISCELANEOUS(Ballroom Dancing)	A	0.750

Term Totals (Undergraduate)

	Attempt Hours	Passed Hours	Earned Hours
Current Term:	18.750	15.750	15.750
Cumulative:	37.500	34.500	34.500

Unofficial Transcript

Term: Fall 2012

Major: Biochemistry

Subject	Course	Level	Title	Grade	Credit Hours	Start and End Dates	R	CEU Contact Hours
BB	2002	01	MICROBIOLOGY	C	3.000			
BB	2550	01	CELL BIOLOGY	C	3.000			
MA	1023	01	CALCULUS III	C	3.000			
PH	1110	01	GENERAL PHYSICS-MECHANICS	C	3.000			
PSY	2406	01	CRS-CLTR PSYCH:HUM BEH IN GL P	A	3.000			

Term Totals (Undergraduate)

	Attempt Hours	Passed Hours	Earned Hours
Current Term:	18.000	15.000	15.000
Cumulative:	55.500	49.500	49.500

Unofficial Transcript

Term: Spring 2013

Major: Biochemistry

Subject	Course	Level	Title	Grade	Credit Hours	Start and End	R	CEU Contact Hours

						Dates		
BB	2920	01	GENETICS	C	3.000			
ID	3100	01	TEACHING METHODS IN MATH & SCI	A	3.000			
MA	1024	01	CALCULUS IV	C	3.000			
PH	1120	01	GEN. PHYSICS-ELEC-MAGNET	C	3.000			
PSY	2401	01	THE PSYCHOLOGY OF EDUCATION	B	3.000			
PY	2716	01	PHILOSOPHY OF DIFFERENCE	A	3.000			

Term Totals (Undergraduate)

	Attempt Hours	Passed Hours	Earned Hours
Current Term:	18.000	18.000	18.000
Cumulative:	73.500	67.500	67.500

Unofficial Transcript

Term: Fall 2013

Major: Biochemistry

Subject	Course	Level	Title	Grade	Credit Hours	Start and End Dates	R	CEU Contact Hours
CH	2310	01	ORGANIC CHEMISTRY I	C	3.000			
CH	2640	01	EXPERMNTAL CHEM I: INSTR ANALY	A	3.000			
CH	2650	01	EXPERIMENTAL CHEM II	A	3.000			
CH	3510	01	CHEM THERMODYNAMICS	B	3.000			
CH	4110	01	BIOCHEMISTRY I	B	3.000			
CH	4120	01	BIOCHEMISTRY II	C	3.000			

Term Totals (Undergraduate)

	Attempt Hours	Passed Hours	Earned Hours
Current Term:	18.000	18.000	18.000
Cumulative:	91.500	85.500	85.500

Unofficial Transcript

Term: Spring 2014

Major: Biochemistry

Subject	Course	Level	Title	Grade	Credit Hours	Start and End Dates	R	CEU Contact Hours
BB	3512	01	MOLECULAR GENETICS LAB	A	1.500			
HU	3900	01	INQ SEM:VISUAL ARTS-W A M	B	3.000			
IQP	JAG	01	WPI TEACHING PRACTICUM AND IQP	SP	3.000			
IQP	JAG	01	WPI TEACHING PRACTICUM AND IQP	SP	3.000			
ISP	JAG	01	CALCULUS I	A	3.000			
PQP	JAG	01	WPI TEACHING PRACTICUM AND IQP	SP	1.500			

Term Totals (Undergraduate)

	Attempt Hours	Passed Hours	Earned Hours
Current Term:	18.000	15.000	15.000
Cumulative:	109.500	100.500	100.500

Unofficial Transcript

COURSES IN PROGRESS -Top-

Term: Fall 2014

Major: Biochemistry

Subject	Course	Level	Title	Credit Hours	Start and End Dates
BB	3080	01	NEUROBIOLOGY	3.000	
CH	2360	01	ORGANIC LABORATORY	3.000	
CH	4150	01	EXPERIMENTAL BIOCHEMISTRY	3.000	
IQP	JAG	01	WPI TEACHING PRACTICUM AND IQP	3.000	

MQP	DSA	01	HEREDITARY BREAST CANCER	3.000
MQP	DSA	01	HEREDITARY BREAST CANCER	6.000
PE	1117	01	MISCELLANEOUS (Ballrm Dancing)	0.750

Unofficial Transcript

Term: Spring 2015

Major: Biochemistry

Subject	Course	Level	Title	Credit Hours	Start and End Dates
CH	2330	01	ORGANIC CHEMISTRY III	3.000	
CH	3410	01	PRINCIPLES OF INORGANIC CHEMISTRY	3.000	
CH	4130	01	BIOCHEMISTRY III	3.000	
CH	4170	01	EXPERIMENTAL BIOCHEMISTRY II	3.000	
MQP	DSA	01	HEREDITARY BREAST CANCER	3.000	
MQP	DSA	01	HEREDITARY BREAST CANCER	3.000	
PE	1117	01	MISCELANEOUS(Ballroom Dancing)	0.750	

Unofficial Transcript

Appendix D: Hours Log

Date	Time In	Time Out	Hours	LP Topic/Subject Matter/Activity
1/21/2014	8:30	12:30	4	Probability and Heredity
1/22/2014	10:30	12:30	2	-
1/23/2014	8:30	12:30	4	Midterm Review started
1/24/2014	8:30	12:30	4	-
1/27/2014	8:30	11:30	3	-
1/28/2014	8:30	10:30	2	-
1/29/2014	8:30	12:30	4	Time to finish Midterm Review packet
1/30/2014	8:30	12:30	4	-
2/3/2014	8:30	11:30	3	-
2/4/2014	8:30	12:30	4	-
2/7/2014	8:30	12:30	4	-
2/10/2014	8:30	11:30	3	Midterm Exam
2/10/2014	11:30	12:30	1	Dyslexia Discussion
2/11/2014	8:30	12:30	4	Natural Selection Lab
2/12/2014	8:30	12:00	3.5	Field trip to see the movie Gravity
2/25/2014	8:30	12:00	3.5	Changes Over Time
2/26/2014	8:45	11:00	2.25	-
2/26/2014	11:00	12:00	1	-
2/27/2014	8:30	12:00	3.5	-
2/28/2014	8:45	12:00	3.25	-
3/3/2014	8:45	12:15	3.5	Classificatin of Living Things
3/4/2014	8:30	12:00	3.5	-
3/5/2014	8:30	12:00	3.5	-
3/14/2014	8:30	12:00	3.5	-
3/14/2014	12:00	3:15	3.25	-
3/19/2014	12:15	3:15	3	The Six Kingdoms
3/24/2014	8:30	3:15	6.75	-
3/26/2014	12:15	3:15	3	-
3/31/2014	8:30	3:15	6.75	Interactions Among Living Things
4/1/2014	8:30	3:15	6.75	-
4/2/2014	12:00	2:15	2.25	MCAS Science Practice
4/4/2014	1:15	3:15	2	-
4/7/2014	8:45	12:45	4	Energy Flows in Ecosystems
4/8/2014	8:45	3:30	6.75	-
4/9/2014	12:15	3:15	3	-
4/14/2014	12:15	3:15	3	Cycles of Matter in Ecosystems
4/15/2014	8:45	3:15	6.5	Owl Pellet Lab (2 days)
4/16/2014	9:15	12:50	3.75	-
4/29/2014	8:30	3:15	6.75	
5/9/2014	8:30	3:15	6.75	Organ Systems and Their Functions
5/14/2014	8:30	3:15	6.75	-

5/16/2014	8:30	3:15	6.75	Organ Systems Chart/Table of Functions
5/19/2014	8:30	12:45	4.25	-
5/20/2014	8:30	1:00	4.5	-
5/20/2014	2:00	3:15	1.25	-
5/21/2014	8:30	4:00	7.5	The Skeletal System Poster Lab
5/22/2014	1:00	4:15	3.25	-
6/3/2014	8:15	3:15	7	-
6/4/2014	8:30	3:30	7	Heart Rate Measuring Techniques Lab
6/4/2014	7:30	9:30	2	Grading at home
6/9/2014	8:30	3:15	6.75	Exercise Heart Rate Lab
6/9/2014	7:00	8:00	1	Grading at home
6/10/2014	6:00	7:30	1.5	sick day/grading at home
6/11/2014	8:30	3:15	6.75	Exercise Heart Rate Lab/Dissection Prep
6/13/2014	10:00	11:00	1	grading at home
6/16/2014	8:30	3:15	6.75	Frog Dissection
6/17/2014	8:30	3:15	6.75	Frog Dissection Report/ LAST DAY FOR ME
	30 additional hours planning/lesson plans/reading material/etc at home			
blue = observation hours		Teaching Hours	151.5	
purple = teaching		Observation Hrs	75	
black = extra (grading, etc)		Extra	35.5	
		Total	262	

C/D Terms
2014

Teaching Practicum Hour Log

DATE	Time In	Time Out	Student	Teacher
1/21	8:30	12:30	a.Q.	J.K
1/22	10:30	12:30	a.Q.	JK
1/23	8:30	12:30	a.Q.	JK
1/24	8:30	12:30	a.Q.	JK
1/27	8:30	11:30	a.Q.	JK
1/28	8:30	10:30	a.Q.	JK
1/29	8:30	12:30	a.Q.	JK
1/30	8:30	12:30	a.Q.	JK
2/3	8:30	11:30	a.Q.	JK
2/4	8:30	12:30	a.Q.	JK
2/7	8:30	12:30	a.Q.	JK
2/10	8:30	12:30	a.Q.	JK
2/11	8:30	12:30	a.Q.	JK
2/12	8:30	12:00	a.Q.	JK
2/25	8:30	12:00	a.Q.	JK
2/26	8:45	12:00	a.Q.	JK
2/27	8:30	12:00	a.Q.	JK
2/28	8:45	12:00	a.Q.	JK
3/3	8:45	12:15	a.Q.	JK
3/4	8:30	12:00	a.Q.	JK
3/5	8:30	12:00	a.Q.	JK
3/14	8:30	3:15	a.Q.	JK
3/19	12:15	3:15	a.Q.	JK
3/24	8:30	3:15	a.Q.	JK
3/26	12:15	3:15	a.Q.	JK
3/31	8:30	3:15	a.Q.	JK
4/1	8:30	3:15	a.Q.	JK

DATE	TIME IN	TIME OUT	STUDENT	TEACHER
4/2	12:00	2:15	a.D.	JK
4/4	1:15	3:15	a.D.	JK
4/7	8:45	12:45	a.D.	JK
4/8	8:45	3:30	a.D.	JK
4/9	12:15	3:15	a.D.	JK
4/14	12:15	3:15	a.D.	JK
4/15	8:45	3:15	a.D.	JK
4/16	9:15	12:50	a.D.	JK
4/29	8:30	3:15	a.D.	JK
5/9	8:30	3:15	a.D.	JK
5/14	8:30	3:15	a.D.	JK
5/16	8:30	3:15	a.D.	JK
5/19	8:30	12:45	a.D.	JK
5/20	8:30	1:00	a.D.	JK
	2:00	3:15	a.D.	JK
5/21	8:30	4:00	a.D.	JK
5/22	1:00	4:15	a.D.	JK
6/3	8:15	3:15	a.D.	JK
6/4	8:30	3:30	a.D.	JK
6/~~8~~4	7:30	9:30	a.D.	JK
6/9	8:30	3:15	a.D.	JK
6/9	7:00	8:00	a.D.	JK
6/10	6:00	7:30	a.D.	JK
6/11	8:30	3:15	a.D.	JK
6/13	10:00	11:00	a.D.	JK
6/16	8:30	3:15	a.D.	JK
6/17	8:30	3:15	a.D.	JK

Appendix E: My Activities

Name _____ Date _____ Class Period _____

Measuring Your Exercise Heart Rate

An **exercise heart rate** shows how fast your heart beats per minute while exercising. It is important to learn how to take your heart rate when you exercise to determine if you are working at a level that benefits your heart.

Your heart rate constantly changes due to the intensity of an exercise. You might be changing the speed of your run, going up or down a hill, lifting weights, or feeling tired. All of these challenges in an exercise period will affect your heart rate. To ensure an accurate count of your pulse at any point when you are exercising, it is recommended that you stop exercise briefly and begin taking your pulse as soon as you can.

Although your pulse is stronger during activity, it is also much faster. The pulse rate falls significantly as soon as you stop. When your muscles stop working, the heart rapidly slows down since there are not as many demands on the body. Since the heart rate begins to slow down immediately, you will take your pulse for only 10 seconds. If you take your pulse for a longer period, you will not get an accurate reading. Therefore, it is important to quickly find your pulse and begin your 10-second count.

Using a watch or clock with a second hand, count the number of beats felt in 10 seconds. Then multiply that number by 6 to compute an exercise heart rate (see example).

Example:

Pulse Rate: _____ × 6 = _____
(beats in 10 seconds) (pulses/minute)

Example of Exercise Heart Rate:
Number of beats in 10 seconds = 24
Multiply by six = 144
Exercise pulse rate = 144 BPM

Name _____ Date _____ Class Period _____

Exercise Heart Rate Activity

The purpose of this activity is to help you learn to take an exercise pulse. Perform each activity, and after each activity, quickly take your pulse.

Activity	Pulse for 10 seconds	Pulse in BPM
Walk slowly for two minutes.		
Jog for two minutes.		
Run as fast as you can for 30 seconds.		
Use only your legs to continuously jump for two minutes.		
Perform a complete jumping jack by adding in the arms, jumping with you feet together and apart for two minutes. Try to keep the same pace that you kept when you were just using your legs.		

Evaluation

1. In which activity did you have the highest pulse? Why?

_____

_____

2. Was it easier or harder to find your pulse after exercise? Why?

_____

_____

3. What methods or strategies did you use to get an accurate pulse?

_____

_____

_____

Name _____ Date _____ Class Period _____

Heart Rate Measuring Techniques—Taking Your Pulse Manually

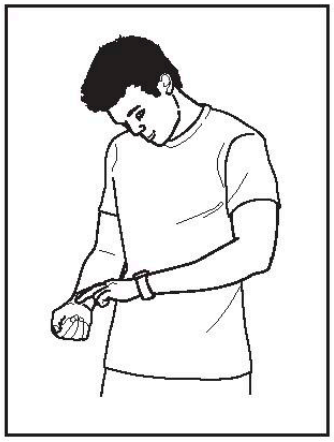
Your **heartbeat** is the sound of the valves in your heart closing as they push blood from one chamber to another. **Heart rate** is the number of times the heart beats per minute (**BPM**), and the **pulse** is the beat of the heart that can be felt in any artery that lies close to the skin.

The heart beats at different rates depending on whether your body is at rest or at work. When resting, the heart rate beats an average of 72 times per minute for high school students and an average of 85 BPM for middle school students. During strenuous physical activity, your heart rate or pulse increases, sometimes to twice or more its resting rate. Your **stroke volume**, the amount of blood pumped for each heartbeat, also increases. This is because the muscles that are working demand more blood to supply them with oxygen and other nutrients.

Heart rate is measured by counting the number of times your heart beats in one minute. One way to determine your heart rate is to manually take your pulse.

The two most common locations used to take a pulse are at the **radial artery** in the wrist and the **carotid artery** in the neck. It is best to practice locating and counting your pulse when you are at rest and again during physical activity.

Measuring the radial pulse. Place the tips of the index and second fingers of one hand on the inside wrist of the other hand. Position the fingers just below the base of the thumb to take the radial pulse at the wrist.



One way to manually take your pulse is to measure your radial pulse.

Name _____ Date _____ Class Period _____

Measuring the carotid pulse. Place the tips of the index and second fingers of one hand on the side of the neck just beside the windpipe.

Measuring the carotid pulse is another way to manually measure your pulse.

Measuring your resting heart rate. Your pulse fluctuates during the day due to activity, stress, caffeine, medications, and other factors that might influence your heart rate. A **resting pulse** is the lowest your heart rate would go during the day. You can get your best reading when you first wake up in the morning, before any activity. Relax your body, and follow the steps below for measuring your pulse.

The following are steps to take when measuring your pulse:

- **Step One:** Apply light to moderate pressure with the fingers until the blood pulsing beneath the fingers is felt. If no pulse is felt, move the fingers around slightly, up or down, until a pulse is felt. Do not apply excessive pressure. This may compress the artery and distort the measurement. Once the pulse is felt, move to step two.
- **Step Two:** Using a watch or clock with a second hand, count the number of beats felt in 30 seconds, then multiply that number by two to compute a heart rate, expressed in **BPM** (beats per minute).

Name _____ Date _____ Class Period _____

Heart Rate Activity

An Example of a Resting Heart Rate

Pulse Rate (in 30 seconds) : _____ × 2 = _____ *(beats per minute)*	Example of Resting Heart Rate: Number of beats in 30 seconds = 43 Multiply by two = 86 Resting pulse rate = 86 BPM

Take your own pulse for 30 seconds, and multiply by two.

Take your pulse six different times.

Try it three times at the carotid artery and three times at the radial artery.

Trial	Carotid Pulse	Radial Pulse
1		
2		
3		

Add all six numbers together, and divide by 6 to come up with your average.

_____ + _____ + _____ + _____ + _____ + _____ = _____ (average)

_____ divided by 6 = _____ (your average resting heart rate)

Remember this number so that you may use it later as your resting heart rate.

Name _____ Date _____ Class Period _____

Evaluation

1. What does *pulse* mean?

_____

_____

2. Why does your pulse fluctuate during the day?

_____

_____

3. What does *stroke volume* mean?

_____

_____

Name: _____ Class: _____ Date: _____

Heart Rate Questions

1. Define the following terms: heartbeat, heart rate, and pulse. (3 pts)

2. What are the two most common locations to take your pulse? (2 pts)

3. What is a resting pulse? (1 pt.)

4. What happens to your pulse when you exercise and why? (2 pts)

5. Why does your heart beat faster when you exercise? Explain. (2 pts)

6. After each exercise activity, why did you take your pulse for 10 seconds instead of a minute? (2 pts)

7. Does heart rate relate to age? Explain your reasoning. (2 pts)

8. Would a younger person and an older person doing the same activity also have the same heart rate? If yes, explain your answer. If not, which person would have a faster heart rate and why? (6 pts)

Name_____ Class_____ Date_____

FOOD CHAIN GAME

Directions:

1. Go to www.brainpop.com/games/foodchaingame.
2. Read the instructions. You MUST complete all questions before moving on to the next food chain.
3. Click "Play the game!" and start with Food Chain #1 The Simple Chain. Follow along on the worksheet.

1. Simple Chain

Draw the food chain that you completed below. Label all producers, 1st, 2nd, and 3rd level consumers, and decomposers.

Draw an energy pyramid and label each level.

2. Bigger Chain

Draw the food chain that you completed below. Label all producers, 1st, 2nd, and 3rd level consumers, and decomposers.

Draw an energy pyramid and label each level.

3. Marine Chain

Draw the food chain that you completed below. Label all producers, 1st, 2nd, and 3rd level consumers, and decomposers.

Draw an energy pyramid and label each level.

4. Mixed Chain

Draw the food chain that you completed below. Label all producers, 1st, 2nd, and 3rd level consumers, and decomposers.

Draw an energy pyramid and label each level.

5. Full Chain

Draw the food chain that you completed below. Label all producers, 1st, 2nd, and 3rd level consumers, and decomposers.

Draw an energy pyramid and label each level.

6. Full Marine Chain

Draw the food chain that you completed below. Label all producers, 1st, 2nd, and 3rd level consumers, and decomposers.

Draw an energy pyramid and label each level.

7. Chain with Human

Draw the food chain that you completed below. Label all producers, 1st, 2nd, and 3rd level consumers, and decomposers.

Draw an energy pyramid and label each level.

Food Chain Game Questions:

1. What is the role of decomposers?

2. Why do you need more producers than 1st level consumers? More 1st level consumers than 2nd level consumers?

3. Why does the arrow in the food chains go from the prey to the predator?

4. What interaction do all food chains show?

Name_____ Class_____ Date_____

The Skeletal System

Materials:

- 2 pieces of construction paper
- Tape and a glue stick
- Scissors
- Skeleton print out

****Each group will need one more #6 piece and one more #16 piece****

Matching:

First, each group will work together to match the number on the print out with the correct bone name.

_____ A. Skull

_____ B. Sternum (rib cage)

_____ C. Humerus

_____ D. Vertebrae

_____ E. Pelvis

_____ F. Radius and Ulna

_____ G. Carpals

_____ H. Metacarpals and Phalanges

_____ I. Femur

_____ J. Fibula and Tibia

_____ K. Tarsals

_____ L. Metatarsals and Phalanges

Procedure:

1. Tape the ends of the 2 pieces of construction paper together.
2. Write the names of the group members on the front of the construction paper.
3. Cut out the bone pieces from the Skeleton print out.
4. Arrange the bones correctly so it looks like the human body.
5. Glue down the bone pieces onto the construction paper.

Conclusions:

1. What are three of the five major functions of the skeletal system?

2. How does the skeleton protect the body?

3. Choose one other organ system in the human body. Explain how the two systems work together in the body.

4. If you run your fingers down the center of your back, you can feel the 26 different bones, or vertebrae, that make up the backbone. Explain what might happen if the backbone was just one large bone instead of a lot of small bones working together?

5. What are the joints of the skeleton? How do they help the skeletal system?

6. List the four different types of joints. Give an example of each.

ANSWER KEY:

Matching:

First, each group will work together to match the number on the print out with the correct bone name.

2 A. Skull

11 B. Sternum (rib cage)

4,18 C. Humerus

7,15 D. Vertebrae

1 E. Pelvis

12,19 F. Radius and Ulna

16 G. Carpals

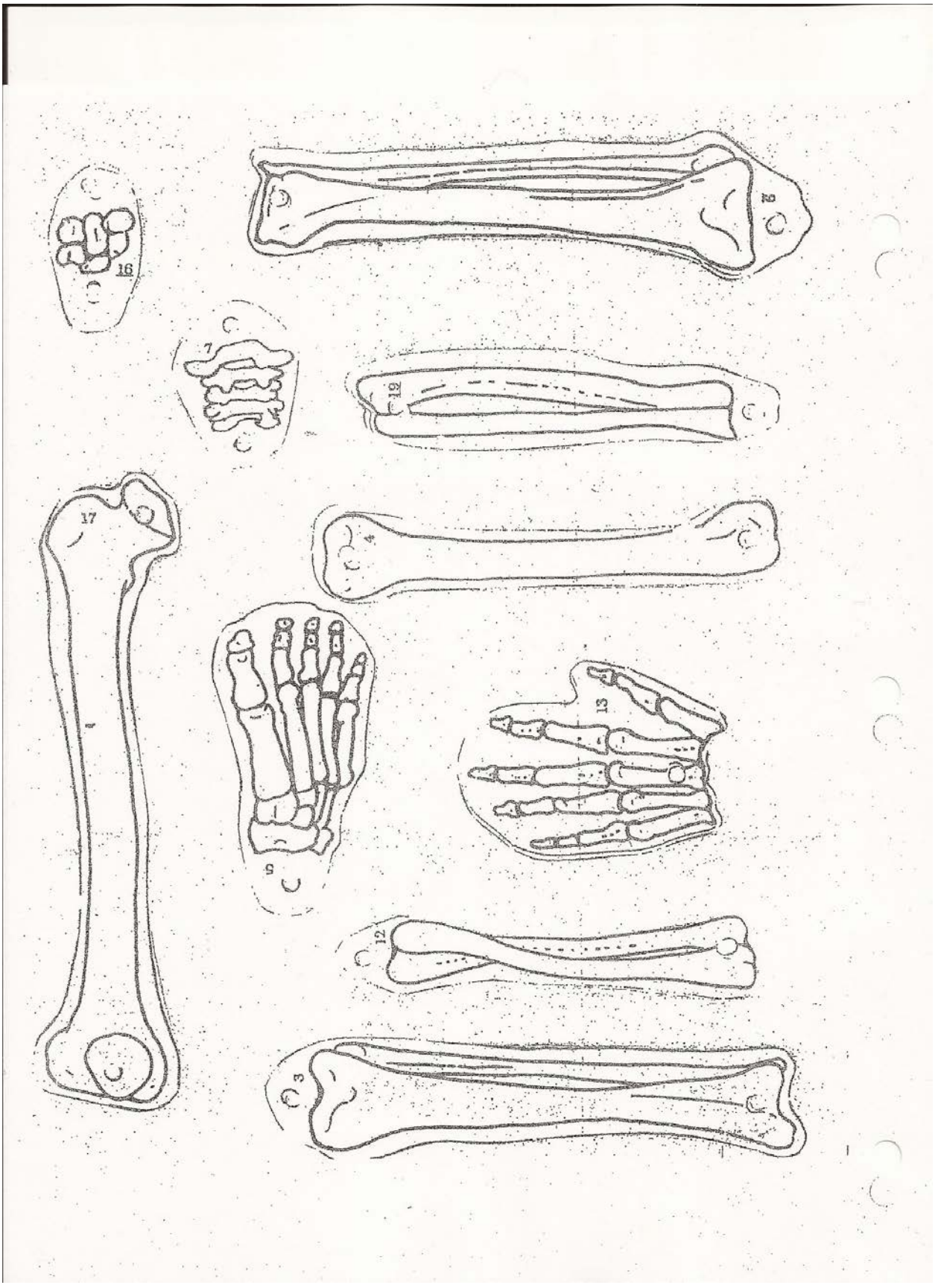
13,14 H. Metacarpals and Phalanges

10,17 I. Femur

3,9 J. Fibula and Tibia

6 K. Tarsals

5,8 L. Metatarsals and Phalanges

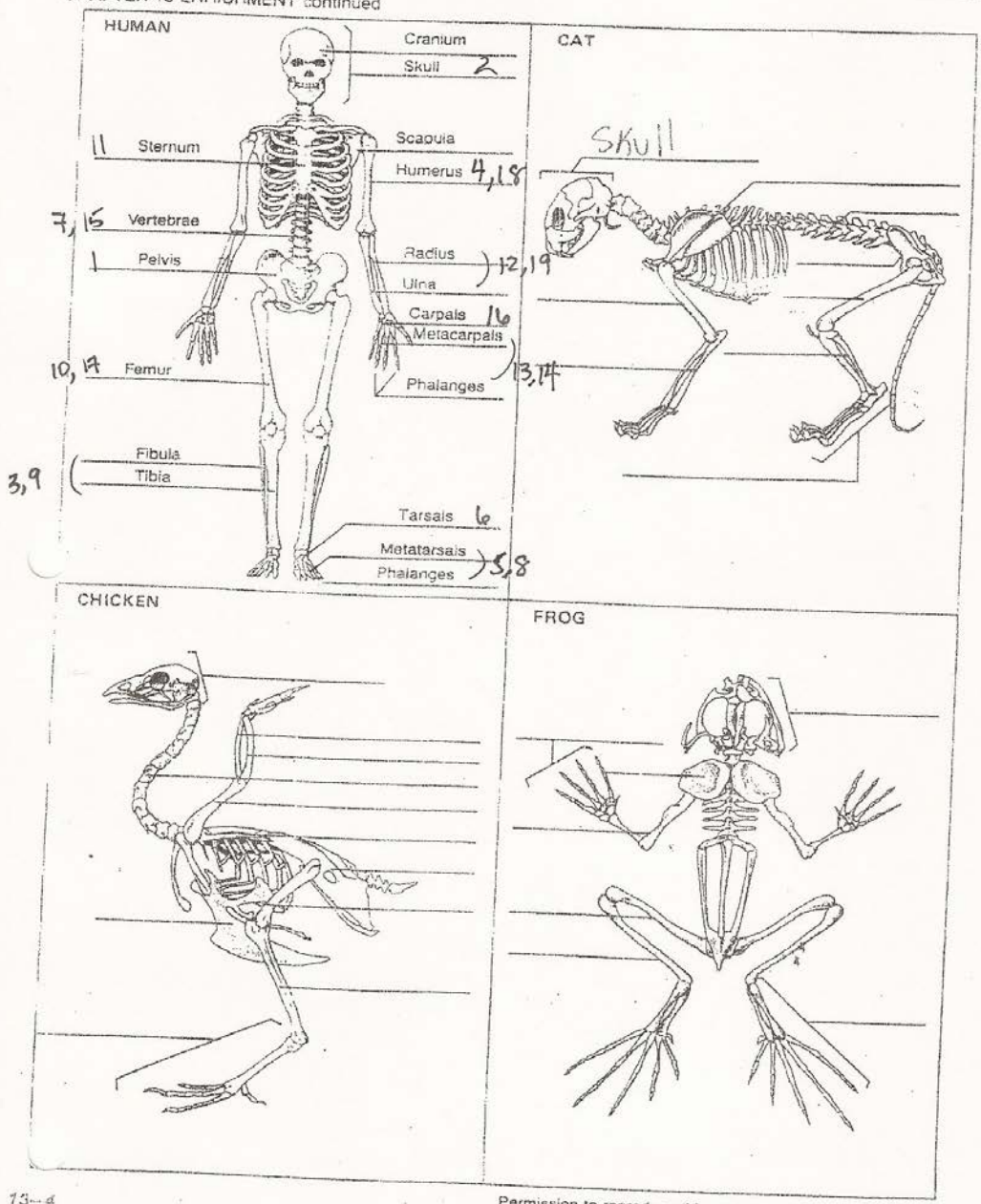

16
8
7
12
17
4
5
13
12
3

6, 7, 16

name of system
3+ functions
choose 1 other system: How does this system help it?

NAME _____ DATE _____ CLASS _____

CHAPTER 13 ENRICHMENT continued



13–4


THE SKELETAL SYSTEM

Design and Engineering Activity

THE BRIDGE CHALLENGE

GOAL: Build a bridge out of straws and tape. You should try and make your bridge the BEST in one of the following qualities:

LENGTH: Try to make your bridge as long as possible. Longest bridge wins.

WIDTH: The width of the bridge will be measured and the smallest distance wins.

STRENGTH: Each bridge will have weights placed on it and the bridge that can support the most weight wins.

COST: You will be charged fake money for your building materials. If you buy more straws or tape, it will eat into your budget. The least expensive bridge wins.

It's also possible to combine 2 or more goals at the same time: a group could try to make their bridge both the Strongest and the Cheapest. Getting second or third place in two or three categories might be even better than doing great in one category, but terribly in all others.

YOUR GRADE WILL NOT BE BASED ON ANY OF THOSE CATEGORIES THOUGH

Your grade will be based on how well you report your design goals and strategies, how well you repot your work quantitatively, and most importantly if you can figure out the strengths and weaknesses of your design. A group that builds an awful bridge but can come up with a good plan for how to improve it will get a better grade than a group who constructs a great bridge out of luck. SO think carefully about your design and complete detailed progress reports.

Groups can try to create these types of bridges or combine the qualities of more than one to accomplish their goals:

-Beam Bridge

-Suspension Bridge

-Cable-stayed Bridge

-Truss Bridge

-Arch Bridge

Each group gets a budget of $500 fake money and an initial 50 straws and roll of tape for free.

10 straws is $50. You can ONLY buy straws in groups of 10.

Tape is $150 per roll.

No other construction materials may be used! However, straws may be cut.

INDIVIDUAL BRAINSTORMING

The goal of this is to come up with as many ideas as possible. The ideas don't have to "work" or be tested at this point, the point is to be really creative and have as many ideas as you can. There are NO bad ideas as long as they follow the rules of the Bridge Challenge.

If you were going to try and build the tallest bridge, what would be some good construction strategies or designs? List as many as you can:

If you were going to try and build a bridge with the narrowest width, what are some good strategies or designs? List as many as you can:

If you were going to try and build the strongest bridge possible (the one that could support the most weight), what are some good strategies and designs? List as many as you can:

What are some ways you could use fewer straws or less tape to build your bridge? By using fewer materials your bridge could be a lot cheaper. List as many ideas as you can:

Would any of your strategies or designs help you to achieve MORE THAN ONE of the four goals? Why? Can you think of any new designs or strategies that would be good for more than one particular goal above? Use the back if you need more space.

Please draw a rough sketch/diagram of your building plan below, including detailed “zoomed in” views if you have plans that would be hard to see what looking at the whole bridge sketch.

Please explain your diagrams and how these design ideas will combine to create a successful bridge. What goal(s) will your design accomplish?

Appendix F: MCAS Practice

2 | 13

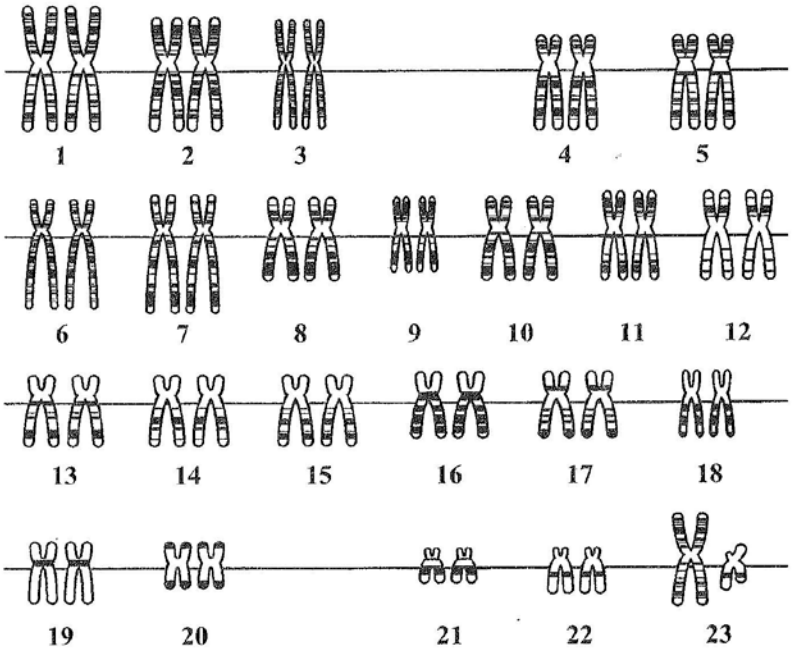
Science and Technology/Engineering — Session 2

Question 21 is an open-response question.

- **BE SURE TO ANSWER AND LABEL ALL PARTS OF EACH QUESTION.**
- **Show all your work (diagrams, tables, or computations) in your Student Answer Booklet.**
- **If you do the work in your head, explain in writing how you did the work.**

Write your answer to question 21 in the space provided in your Student Answer Booklet.

21 The diagram below represents 23 pairs of structures taken from the nucleus of a human body cell.



a. Identify the structures shown in the diagram.

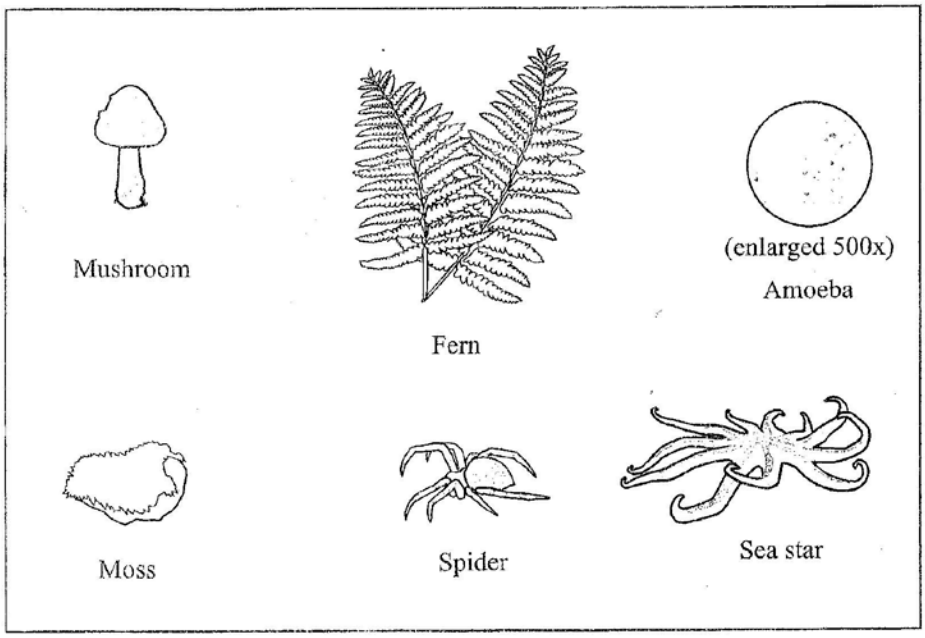
b. Identify the information that is contained within these structures.

c. Describe how the structures from this cell would compare to the structures in the nucleus of another body cell from the same person.

d. Explain why the structures are in pairs.

Write your answer to question 19 in the space provided in your Student Answer Booklet.

19 Individual organisms can be sorted into different kingdoms based on their characteristics. Pictures of six organisms and a table listing four kingdoms are shown below.



Four Kingdoms of Living Organisms

Animalia	Plantae	Fungi	Protista

a. Copy the table above into your Student Answer Booklet.

b. Write the name of each pictured organism under the correct kingdom in your copy of the table.

c. For each kingdom listed in the table, describe one characteristic that all organisms in that kingdom have in common.

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Question 37: Open Response

Objective(s): Structure and Function of Cells - 2

The diagrams below show an *Amoeba* and a *Chlamydomonas*.

Diagram A

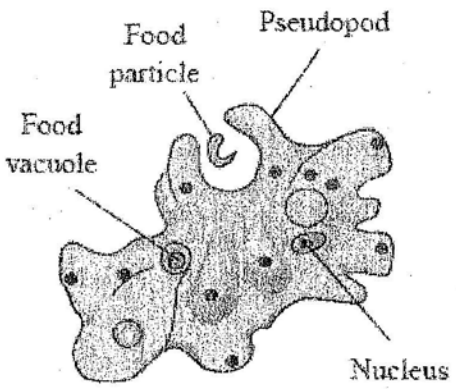
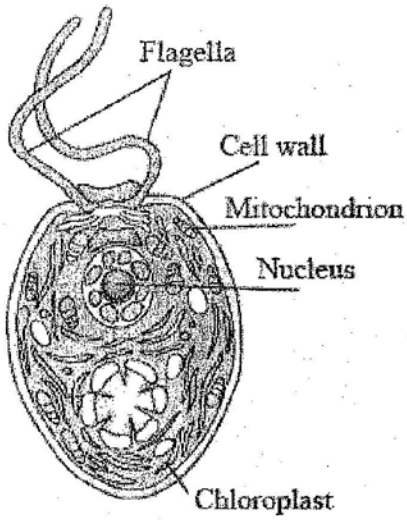
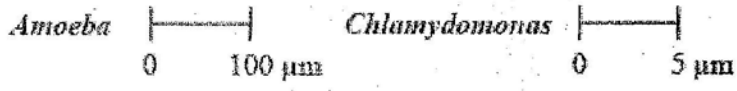


Diagram B





Both organisms can be seen only with a microscope. Since these are one-celled organisms, each cell must be able to carry out all important life functions, such as moving from place to place and getting food.

a. Compare the ways these two organisms move. Be sure to include information from the diagrams in your answer.
b. Compare the ways these two organisms obtain nutrients. Be sure to include information from the diagrams in your answer.

Question 12 is an open-response question.

- **BE SURE TO ANSWER AND LABEL ALL PARTS OF EACH QUESTION.**
- **Show all your work (diagrams, tables, or computations) in your Student Answer Booklet.**
- **If you do the work in your head, explain in writing how you did the work.**

Write your answer to question 12 in the space provided in your Student Answer Booklet.

12 A scientist has three unlabeled samples of pure metals. He wants to determine the identity of each metal.

a. Identify which **one** of the following properties the scientist should use to determine the identity of the pure metal in each sample: color, melting point, mass, or volume.

b. Explain why the property you identified in part (a) can be used to determine the identity of the pure metal in each sample.

The scientist cuts each of the samples of pure metal into two smaller pieces.

c. Is the property that is used to determine the identity of the metal affected when each sample is cut into two pieces? Explain your answer.

The scientist can also use density to determine the identity of the pure metal in each sample.

d. Describe how the scientist can determine the density of the pure metal in each sample.

Appendix G: MCAS Review

Mcas review

NAME

All questions must be answered in complete sentence. This counts as part of your final test.

1. List the steps of scientific methods in order

2. In an experiment what are variables?

3. What do we call a variable that is changed in an experiment?

4. What do we call a variable that is kept the same in an experiment?

5. What do we call a variable that measured change?

6. What is mass?

7. How do measure mass of an object

8. What are the basic units for mass?

9. What is volume?

10. How do you find volume of a regular object? Write the formula

11. How do your find volume of irregular object? Name and explain the process

12. What is weight?

13. How is weight different from mass?

14. What is density?

15. How do you find density of an object? Write the formula .Remember the heart!

16. Does a density of an object change with change in size or amount of an object

17. Classification. Kingdoms

	Plant kingdoms	Animal	Bacteria	Archaea	Fungi	Protist
Producers Consumers Decomposer						
Eukaryotic or prokaryote						
Basic Characteristics						
Organisms Example						

18. List the classification levels

19. Draw an energy pyramid

20. Draw a food web?

21. Name and draw the three main layers of the Earth ?

22. Name 12 parts of the cells and their functions

23. List the raw materials of photosynthesis

24. List products of raw material?

25. Organise the following in order from least to largest
Organ, tissue, tissue, organ system, organism

26. What is asexual reproduction? Give example

27. What is sexual reproduction? Give Example

28. What are chromosomes? Draw one

29. Name some of organism's physical traits

30. Name some of organism's behavioral traits

31. List four evidence of evolution

32. What are contour maps?

33. in a contour map, if the contour lines are close to each other, what this indicates

34. Name and define the four types Rocks.

35. Explain how each type of rock is formed?

36. Explain what causes seasons

37. Name and draw the two eclipses

38. What hold the moon and the earth around the Sun?

39. Name three the of plate boundaries and explain how plate move in each?

40. Name and explain the three types of heat transfer?

41. What is kinetic energy?

42. What is potential energy?

43. What is a chemical change?

44. What is a physical change?

45. What is the boiling point of water in Celsius?

46. What is the freezing point of water in Celsius?

47. State the three state of matter

48. Explain the following terms: boiling, Freezing, vaporization, melting, condensation.

49. What is an element?

50. What is a compound?